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TRANSCRIPT OF RECORD
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(GOVERNMENTS EXHIBITS)

Supreme Court of the United States

OCTOBER TERM, 1956

No. 3

UNITED STATES OF AMERICA, APPELLANT,

vs.

E. I. DU PONT DE NEMOURS AND COMPANY, ET AL.

**APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF ILLINOIS**

FILED JUNE 14, 1955

PROBABLE JURISDICTION NOTED OCTOBER 10, 1955

SUPREME COURT OF THE UNITED STATES

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VOL. VIII

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Copy to: Mr. LAMMOT DU PONT
BUILDING

June 29, 1936

Mr. W. J. Beadle, Asst. Director
Development Department
BUILDING

Dear Mr. Beadle:

Referring to your letter of June 12th and the history of the tetraethyl lead business, I have few comments to make and such as they are, are attached hereto.

Personally, I feel that the Standard Oil Company is somewhat grasping and have not demonstrated that they are very good partners in this particular enterprise.

Yours very truly,

Irenee du Pont

—2—

Exhibit B-5: The item under date of December 23rd does not square with my recollection, which is that I was surprised that the Standard Oil Co. could claim their contract was purely an agency one and that it was "small" of the Standard Oil not to pay for the losses which it had occasioned. However, the Ethyl Gas having admitted the agency, there was no other answer.

The item of January 13th; I think the decision to work out a plan of putting an anilin bromide plant aboard ship was arrived at on the 31st of December, 1924. The reason for it was to avoid the silt contained in littoral waters, tending to plug up and therefore make less efficient the filtration plant used in the process. I think it was also

noted at that time that Gulf Stream water was some 10% higher in bromine than the littoral waters.

I think great stress could be laid on the fact that the Du Pont Company has always treated the Ethyl Gas project somewhat as a partnership undertaking. They have never jockeyed to obtain contractual advantage over their associates. I do not think this is true of the Standard Oil interests who have very definitely used Ethyl Gas to further the ends of their own company. The writer of the report could not discover that in the Ethyl Gas correspondence, there is evidence that the Standard Oil Co. of New Jersey habitually under-doped their Ethyl gas, in other words, put in less Ethyl fluid than was prescribed in the contract. This practice was stopped by bringing it to the attention of the Standard Oil officials while sitting in on an Ethyl Gas board meeting.

Referring to Page 17 of Wescott's report of June 9th, I am clear in my recollection that the quotation from my letter of February 2nd relative to the chloride route being the cheapest and simplest was

—3—

not an after the fact point of view. Any chemist would have naturally chosen Ethyl chloride rather than Ethyl bromide as a re-agent, but at the time it was thought that the dangers of the pressure required were such as to make the Ethyl bromide the route to be desired.

I do not think it is stressed sufficiently that the so-called chlorine process, using Ethyl chloride instead of Ethyl bromide, is precisely what would come to the mind of any chemist. The use of the bromide was secondary in an endeavor to escape some of the hazards of manufacture. It is not conceivable that the Dayton Laboratories should not have carefully considered Ethyl chloride as the re-agent

and it was simply lack of knowledge and prudence which led the Standard Oil to experiment with Ethyl chloride without duly appreciating its dangers. In due course, the more dangerous route could and was made reasonably safe, but it was an expensive "trip" to have tried it prematurely in the hands of more or less novices.

Tetraethyl lead is not a manufacture which we should engage in on a low return basis. There is always danger by reason of its poisonous properties. The cutting down of the margin of profit will inevitably lead to taking less expensive precautions. It has the commercial hazard of being a one-consumer industry so that it is imprudent to take any chances on increasing investment to obtain lower yields or greater output when we are in the hands of one consumer.

The broad gauge policy of the General Motors Corp., who looked to us as the sole manufacturer, was no inconsiderable contribution to the rather phenomenal success in the manufacture of tetraethyl lead.

If we closed the operation today and charged off the difference between our capital investment over its scrap value, adjusted past earnings, I think, would not average above that which is necessary to

—4—

obtain the volume and production costs and to recompense for the unknown risks taken.

It seems to me best for those negotiating, to take up with the General Motors directors, who are more nearly our partners, the report modified by omitting some of the knocks against the judgment of Sloan, Brown, etc. and also omitting some of the rather over-drawn claims for my discernment. (besides, I was acting then as a director of Ethyl Gas) this with a view of getting their support

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in making a fair contract looking to a continuation of the partnership idea.

NOTE: At lower right of first page is written "GMC-576"; at lower right on second, third and fourth pages is written "GMC-576a"; at upper left on first page is written "Filed with report" with an arrow pointing to the name of Mt. Lammot du Pont; at first page upper right is stamped "Received Jun 30, 1936, Lammot du Pont"; an irregular line is drawn through the address; italics indicate handwriting.

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ETHYL GASOLINE CORPORATION
CHRYSLER BUILDING
405 LEXINGTON AVENUE

NEW YORK December 19, 1935.

Mr. Lammot duPont, President,
E. I. duPont de Nemours & Company,
Wilmington, Delaware.

Dear Mr. duPont:

You have requested me to make a written reply to your proposal which was attached to your reply to our proposal in your letter of November 27th.

Inasmuch as we discussed your proposal at considerable length at our last meeting it seems to me that it is not necessary to review all of the objections which I stated at that time but rather to confine my reply to your basic idea, namely, that we should make an exclusive contract with your company until January 1, 1943, at a price of 28¢ per pound, with the understanding that periodical calculations of the net profits of duPont and Ethyl are to be made and that if the net profits of duPont are greater or less than one-half of the net profits of Ethyl then "an adjustment in the price of tetraethyl lead either up or down from the previous price of tetraethyl lead will be made in such manner as to bring the respective net profits" in a relation of two to one, conditioned, however, that in no event shall the net profits of duPont be less than 20% of its permanent investment in the manufacturing of tetraethyl lead.

1. Time is running against both our manufacturing and use patents. The former expire in 1943 and the latter in 1947. My feeling is that the present contract is preferable

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to the long term contract which you have suggested, and that it would be entirely unacceptable to us.

2. As previously explained, it is our opinion that the proposal which we submitted to you is predicated upon a logical and fair basis; namely, that our business should be evaluated from two angles:

—2—

- (a) That of a non-monopoly business for which those who had capital invested in it were entitled to get a certain yearly return—irrespective of the monopoly; and
- (b) that of a monopolistic business founded upon the use patents owned by the present stockholders and for which they were entitled to a larger return than your company which does not have any interest in that monopoly.

Therefore your suggestion of having the duPont Company participate in the profits derived from the manufacture and sale of tetraethyl lead on the basis of one to two is altogether unacceptable to us, as is also your proposal that irrespective of the future of the general business your company should be guaranteed net profits of not less than 20% of your permanent investment in the business.

In view of your having declared that our proposal is entirely unacceptable to you and I have stated to you that your counter-proposal, above referred to, is altogether unacceptable to us, and we would seem to have fairly well exhausted the pros and cons of each proposal in our several interviews without having reached any definite point other than that of disagreement, I beg to submit herewith for

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your consideration a proposal which is a personal one of mine and which has not received the consideration of any member of our Board. It contains at least the outline of a plan which I personally believe would, if adopted, inure to the interest of both parties. You, of course, appreciate the fact that if you should regard this individual proposal of mine as containing principles which are acceptable to you, that I would have to take it up with our Board for its consideration since I have received no instructions whatsoever to carry on negotiations with you relative to the attached proposal. I am, however, proceeding with it with the feeling that it is the desire of our Board to effect an agreeable and harmon-

—3—

ious arrangement with your company of a permanent character, and that the attached proposal embodies principles upon which we can and should reach an accord.

Very truly yours,

E. W. Webb

A:H

NOTE: At lower right of all three pages is written "GMC-574"; at first page upper right is stamped "Received Dec 19, 1935, Lammot du Pont"; italics indicate handwriting.

4769

ETHYL GASOLINE CORPORATION
CHRYSLER BUILDING
405 LEXINGTON AVENUE

NEW YORK February 27, 1936.

Mr. Lammot duPont, President,
E. I. duPont de Nemours & Co.,
Wilmington, Delaware.

Dear Mr. duPont:

I had hoped that we would be able to arrive at a mutually satisfactory partnership arrangement with you for the manufacture of tetraethyl lead embodying the basic principles outlined in my last proposal, I feel confident this will not be accomplished in view of statement that you will not subscribe to any arrangement of this character that does not give your company the absolute control of the suggested subsidiary company.

I think that another lead plant should be completed within a year and probably at a somewhat earlier period and that to postpone the beginning of its construction much longer may place us in a position where we are unable to meet the requirements of our customers. Needless to say, such a situation would be very unfortunate. Also it would appear expedient to build the plant somewhere in the Middle- or perhaps South-West.

I feel that it would be unfair at this time to ask you to build this additional plant, not knowing what our Board will decide to do in reference to our building and operating or having built and operated for us a plant, having in mind that not many months will expire after the completion of such a plant before we will be entitled to the benefit of your "know-how" and to licenses under any or all of your improvement patents. This, as you know, takes place on January 1, 1938.

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The situation would unquestionably be clarified if you would be good enough to advise whether you would be agreeable to advancing the date from January 1,

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1938, to the present time, and if so, the royalty that we shall pay you for tetraethyl lead produced by us prior to January 1, 1938. The royalty, of course, to be based upon the "know-how" and improvements made by you which are not covered by any contract between us.

Very truly yours,

E. W. Webb

July 1, 1938

A:H

NOTE: At lower right of both pages is written "GMC-575"; to right of address is stamped "Received Feb 28, 1936, Lammot du Pont" and "Answered Mar 6, 1936, Lammot du Pont"; at first page upper left appear the initials "WFH" and "EGR", followed by the notation "copies 3/2"; underlining on first and second pages is by hand; italics indicate handwriting.

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Copy: Mr. A. P. Sloan
Mr. Donaldson Brown
Mr. W. C. Teagle

March 6, 1936.

Mr. E. W. Webb, President,
Ethyl Gasoline Corporation,
Chrystler Building,
New York City, N. Y.

Dear Mr. Webb:

Your letter of February 27th, asking us to advise you the royalty that we would expect you to pay for tetra ethyl lead produced in a plant, built and owned by you, was duly received and we have given the matter careful consideration.

First, let me point out an error in your letter: You ask that we quote a royalty for tetra ethyl lead produced by you prior to January 1, 1938. At another point in your letter you call attention to the fact that you are entitled to our "Know-How" and a license under our manufacturing patents on January 1, 1938. This is correct, but the agreement under which you are entitled to these things contemplated the beginning of construction of a plant on or after January 1, 1938. Obviously, if that date were now to be advanced to the present time, you should properly pay a royalty for tetra ethyl lead manufactured prior to January 1, 1938 and also subsequent to January 1, 1938, up until a date when a plant might be reasonably conceived as being completed, if it had been started on January 1, 1938. This

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date might be reasonably fixed at August 1, 1938; that is, seven months allowed for the completion of a plant at an entirely new site. Any quotation for royalty should be ap-

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plied to the manufacture of tetra ethyl lead prior to August 1, 1938.

We have reviewed the situation very carefully and have come to the conclusion that the value of our manufacturing patents, expressed as savings in manufacturing costs, is in excess of the profit that we make on tetra ethyl lead when sold you at 28¢ per pound. The value of our Know-How is in addition to this and cannot well be expressed in "cents per pound." While our technical people appreciate the fact that a valuation of this kind is estimation, and are naturally inclined to be conservative, the matter has been explained to me personally, and it is my own considered, personal opinion that the value of these patents and Know-How, expressed in savings in manufacturing costs, is far in excess of our profits on tetra ethyl lead sold at 28¢ per pound.

In view of the above, we cannot consistently offer license, such as you request, and the rights to our Know-How at a royalty any less than our present profits per pound of tetra ethyl lead, and would have to require that this royalty be paid on tetra ethyl lead manufactured by you under our patents and rights up until August 1, 1938.

It must be obvious to you that if we charge a royalty as much as our present profits, that Ethyl Gasoline Corporation

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cannot possibly make a saving by going into the manufacture itself, except on the assumption that Ethyl Gasoline Corporation operating a comparatively small plant can make a lower cost than du Pont Company with its present plants. This assumption seems to me impossible.

You state that the situation would be clarified if we make the quotation requested. Not wishing to delay the construction of an additional plant, we feel obliged to comply with

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your request, even though it seems to us a quotation which you cannot accept. We therefore advise you that we would expect a royalty of 10¢ per pound of tetra ethyl lead manufactured by Ethyl Gasoline Corporation under patents, processes and manufacturing Know-How supplied by du Pont on all tetra ethyl lead manufactured prior to August 1, 1938.

I have told you on many occasions, have told Mr. Sloan and Mr. Brown on several occasions, and have told Mr. Teagle on at least one occasion, that it is my carefully considered opinion that Ethyl Gasoline Corporation would make a very grave error in undertaking the manufacture of tetra ethyl lead. I wish to repeat that statement now and to make it a matter of record; and I am therefore sending a copy of this letter to the three gentlemen above mentioned.

Yours very truly,

(stamped) LAMMOT DUPONT

PRESIDENT.

LduP/MD

NOTE: At lower right of all three pages is written
"GMC-575a".

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ETHYL GASOLINE CORPORATION
CHRYSLER BUILDING
405 LEXINGTON AVENUE

NEW YORK March 18, 1936.

Mr. Donaldson Brown, Vice President,
General Motors Corporation,
1775 Broadway,
New York, N. Y.

Dear Mr. Brown:

I enclose copy of a letter I have written today to Mr. duPont, in line with the suggestion contained in your letter of the 13th instant.

I think the logical and fair conclusion to draw from Mr. duPont's letter is that although they considered the value of their patents and "know-how" to be in excess of their profits on the manufacture of tetraethyl lead, nevertheless they would grant them to us on a basis which would be not less than their present profits on such manufacture.

I said in my letter of the 12th inst. addressed to you and certain other members of our Board that I was not surprised at the profit of 10¢. The reason I made that statement is because I have had estimates from several sources in our organization of the cost of manufacture, varying from 18¢ to 22¢ per pound on present volume of production. One of these estimates was made after very thorough investigation and arrived at a figure of 20¢ per pound, which included a 20% profit on permanent investment in the manufacture of raw materials as well as on the finished product.

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Also on one occasion when I was discussing with Mr. duPont the formula which was provided for in my proposal for a joint company, Mr. duPont asked me what I thought should be the stated profit in cents per pound for the manufacture of tetraethyl lead (irrespective of profit on raw materials). I told him that not knowing the actual items of cost it was difficult for me to name a figure but that offhand I would say somewhere between 4¢ and 5¢; that such figures would net the joint company on present production between 15% and 20% return. He said he thought it should be in the neighborhood of 8¢ a pound. It was because of this statement of his plus the estimates that I received which prompted my statement that I was not surprised at the figure of 10¢ a pound profit.

Obviously it is difficult for us to accurately evaluate duPont's profit in view of several unknowns. We do not know at what price they charge the lead operation for sodium and ethyl chloride, which are sold in such large quantities by separate units of their organization to the tetraethyl lead unit, or their amortization and Wilmington overhead charges.

I think in connection with the value of duPont's improvements and "know-how" that it is of importance to bear in mind the fact that the basic patent is owned by us and during the eleven years in which they have been our sole source of supply their research expenses in this business have doubtless been included in the cost of manufacture of tetraethyl lead and paid for by us in the purchase of the product.

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I am taking the liberty of sending a copy of your letter to me, a copy of mine to Mr. duPont, above referred to, and

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of this letter, to the other members of our Board to whom

I wrote on the 12th inst.

With kindest regards,

Yours sincerely,

E.W.Webb

A:H

NOTE: Across the top of the page is written "Ethyl:
Org.-Reorg.-Mfg. Activities"; at upper right is an illegible
initial; check marks and underlining are by hand; italics
indicate handwriting.

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ETHYL GASOLINE CORPORATION
CHRYSLER BUILDING
405 LEXINGTON AVENUE

NEW YORK March 18, 1936.

Mr. Lammot duPont, President,
E. I. duPont de Nemours & Co.,
Wilmington, Delaware.

Dear Mr. duPont:

Thank you for your letter of the 6th inst. in reference to royalty on your improvement patents, etc.

I think the fair interpretation of your letter is that you are making a profit of not less than 10¢ per pound of tetra-ethyl lead manufactured, and have so expressed myself to members of our Board, for the following reasons:

You say in your letter that after carefully reviewing the situation you have come to the conclusion that the value of your manufacturing patents "expressed as savings in manufacturing costs, is in excess of the profit that we make on tetra ethyl lead when sold you at 28¢ per pound. The value of our Know-How is in addition to this and cannot well be expressed in 'cents per pound'". Then you say:

"In view of the above, we cannot consistently offer a license, such as you request, and the rights to our Know-How at a royalty any less than our present profits per pound of tetra ethyl lead, and would have to require that this royalty be paid on tetra ethyl lead manufactured by you under our patents and rights up until August 1, 1938."

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and then follow with this statement:

"We therefore advise you that we would expect a royalty of 10¢ per pound of tetra ethyl lead manufactured by Ethyl Gasoline Corporation under patents, processes and manufacturing Know-How supplied by duPont on all tetra ethyl lead manufactured prior to August 1, 1938."

One of our Directors has expressed the view that I should ascertain from you whether the interpretation I have placed on your foregoing quoted statements is correct.

It would be appreciated if you would advise me on this point.

Very truly yours,

EWW Webb

A:H

NOTE: At lower right is written "GMC-575b"; above address is stamped "Answered Mar 19, 1936, Lammot du Pont"; to right of address is stamped "Received Mar 19, 1936, Lammot du Pont."

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ETHYL GASOLINE CORPORATION
CHRYSLER BUILDING
405 LEXINGTON AVENUE

NEW YORK March 12, 1936

Messrs. Donaldson Brown
E. M. Clark
W. S. Farish
F. A. Howard
Alfred P. Sloan, Jr.
W. C. Teagle

New York City, N. Y.

Dear Sirs:

Prior to December 19th I had several extended interviews with Mr. duPont, Mr. Harrington and Mr. Robinson relative to our proposal for combining the interests of the three interested companies in the manufacture and sale of Ethyl and "Q" fluids. I think we explored all the avenues that any of us can think about which might lead to some common ground of understanding, but ended in total failure to do so.

Having reached this point I wrote Mr. duPont on December 19th attaching a proposal of mine which was predicated upon the duPont Company and the Ethyl Corporation forming a company solely for the manufacture of tetraethyl lead and upon the basis of fifty-fifty stock ownership. I handed a copy of the letter and proposal to each Mr. duPont, Mr. Harrington and Mr. Robinson at a meeting I held with them in Wilmington on that day. At the conclusion of that meeting Mr. duPont informed me that he was of the opinion that it contained underlying principles which he was willing to recommend for approval to his Executive Committee but suggested that inasmuch as I

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had not submitted it to our Board that I should do so before further discussing it with him. A day or so afterward in a telephone conversation with Mr. duPont he informed me that he had briefly discussed the subject with two members of his Executive Committee and they were in accord with him in regard to these basic principles.

On December 20th I wrote you in reference to this last mentioned Wilmington meeting and attached a copy of my proposal with notations covering comments by Mr. duPont in

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reference to certain provisions.

The proposal provided, insofar as the salient features were concerned, the following:

1. duPont and Ethyl to form a joint company each owning one-half of the stock.
2. Ethyl to make a contract to purchase its entire requirements of tetraethyl lead for use in North America from the joint company so long as Ethyl should be engaged in that business, and that neither duPont nor the joint company would sell this product to anybody else either in or outside of North America.
3. duPont and Ethyl to assign to the joint company all North American manufacturing patents or applications therefor relating to the manufacture of tetraethyl lead which may now or hereafter be owned or controlled by them, and make available to the joint company the "know-how" in the field of manufacturing tetraethyl lead, and the designing, constructing and maintaining of plants therefor.

4. duPont to lease its Deepwater plants to the joint company.

(a) duPont to operate the Deepwater plants for the account of the joint company on a fee basis and the product to be sold by the joint company to Ethyl under a definite formula.

5. Plants located other than at Deepwater to be operated by the joint company with the further proviso that: "If duPont and Ethyl representatives on the board of the joint company are unable to agree on management or personnel then the Ethyl representatives on the board shall have the deciding voice in respect thereto, it being understood, however, that those employed in the operation of said plants will be men who have had experience in the operation of the Deepwater plants provided such men are made available to it by duPont, until such time as men who have not had such experience may be trained in the operation of said plants."

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(a) The price to be paid by Ethyl to the joint company for tetraethyl lead manufactured other than at Deepwater also to be under a fixed formula.

6. Ethyl to have the right to decide the capacity for which additional plant or plants shall be designed and the location.

After getting your views I had a meeting with Mr. duPont and Mr. Harrington and told them that I felt sure my proposal contained the basis upon which we could satisfactorily reach an agreement with their company although, of course, there would be a great number of details to be worked out. Mr. duPont then stated that upon further

consideration of the proposal he was unwilling to subscribe to the above quoted provision regarding the operation of plants other than at Deepwater; that their company would not go into a joint company with us where we would have the deciding voice regarding the management of such plants. I told him I thought our directors would not insist upon our having the deciding voice so long as we had an equal voice with duPont in the operation of plants other than at Deepwater; that I did not believe we would ever accomplish anything toward bringing about competitive manufacturing, to which I thought the Ethyl Corporation was entitled, if the joint company should be controlled solely by the duPont Company or any other one company. That if the plants away from Deepwater should be constructed with the benefit of the experience and "know-how" of the duPont Company and operated by trained personnel headed up by able and strong management, I could see no reason why such an operation shouldn't work out to the mutual advantage and satisfaction of duPont and Ethyl, as has taken place in respect to the operation of the Ethyl-Dow seawater plant.

After considerable discussion of this matter of control, which was the most important point treated at that meeting, Mr. duPont stated that his company would not go into such a joint enterprise without it being definitely understood that duPont would be in absolute control of the manufacturing operations. My recollection is that he also

—4—

stated that the manufacturing operations other than at Deepwater would have to be controlled substantially to the same extent as at Deepwater, except that he was willing to concur in the proposal that Ethyl should have the right to decide the capacity and location of such plants. At the

conclusion of the meeting I told Mr. duPont I felt very confident that we would not be able to reach an agreement if he insisted upon this matter of absolute control by the duPont Company. He asked me to present the matter to Mr. Howard, who was then about to leave for Europe, and ascertain his views before he left as well as those of his associates on our Board.

Shortly thereafter I discussed the matter with Mr. Howard and subsequently he told me he had discussed it with his associates and that they could not meet Mr. duPont's wishes in this question of control. Inasmuch as Mr. duPont had expressed himself so unequivocably on this subject it seemed to me I could accomplish nothing further regarding negotiations at that time. This interview with Mr. Howard occurred quite some time ago and since then I have been obliged to be away from the office a good deal and when here, frankly, have not seemed to get time to give the matter the attention it doubtless deserved. However, after thinking it over as best I could it seemed to me that since we should be giving very serious thought to the building of a lead plant because of the very limited cushion we have today between the production facilities at Deepwater and our estimated requirements for this year, that I should write Mr. duPont as I did in my letter of February 27th, a copy of which I sent you last Monday.

I am not surprised that Mr. duPont in his reply letter of the 6th instant states that their profit is 10¢ a pound, but am surprised that the value of their manufacturing patents "expressed as savings in manufacturing costs, is in excess of the profit that we make on tetra ethyl lead when sold you at 28¢ per pound", and that he should fix the royalty at 10¢ a pound.

I got the distinct impression while these negotiations were going on that duPont's improvements were roughly figured by them to be worth between 15% and 20% on their permanent investment. Also when I wrote asking Mr. duPont if he would name a royalty I had before me the proposal which they made to us under date of November 20th which was a counter proposal to that which we originally submitted to them. It contains this statement:

"7. (e) Although the 20% on its investment guaranteed to duPont may seem high in spite of the nature of the business and the circumstances, it is more than justified by the fact that duPont's patented inventions used in the process of manufacture of tetraethyl lead are of such importance that it is estimated that without the use of those inventions the increased cost would amount to more than 15% on duPont's investment under conditions existing today."

In the last discussion with Mr. duPont and Mr. Harrington above referred to, they informed me that their permanent investment in the lead business was a little under \$8,500,000 as of November 30th last, and that their working capital including mostly inventory was in the neighborhood of \$2,500,000. Last year we purchased 44,184,353 pounds of lead from them, which at 10¢ a pound profit, of course would be \$4,418,435. This amounts to a return of 51.97% on permanent investment and 40% on total capital employed. 15% on the permanent investment would amount to 3½¢ per pound.

Figuring on the same basis for this year's expected purchase of 48,000,000 pounds the profit to duPont on their

permanent investment will be about 56% and on their all capital employed about 43%, since it is doubtful that they will have any materially larger permanent investment than they had on November 30th last and probably not in excess of 10% in working capital—which percentage will about equal our estimated increase in purchases.

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I might add that the royalty asked of 10¢ a pound is for the manufacture of tetraethyl lead and does not include the "know-how" or licenses under their patents for sodium or ethyl chloride which other than pig lead are the two important products necessary for the manufacture of tetraethyl lead. If our above expectations for this year's sales are realized there will be used 19,200,000 pounds of sodium and about 50,000,000 pounds of ethyl chloride. Both of these commodities are manufactured by the duPont Company and sold to the lead operation. What their profits are on these two raw materials we do not know.

I think it is a fair assumption that the reason why we have been unable to make headway in our negotiations with the duPont Company is because of the very handsome profits that they have been and are making on the manufacture of tetraethyl lead. The question obviously presents itself, what can we do about it in view of the fact that they are our sole source of supply?

One thing it seems to me is evident, and that is the longer we postpone doing other than we have in the past the worse our position becomes so far as making any change in the future.

There is undoubtedly merit in the claim of Mr. duPont that the Ethyl Corporation, as such, can not be expected to do as good a job of manufacturing tetraethyl lead as the duPont Company, even with the "know-how", etc. of the

latter. I have on several occasions told Mr. duPont and his associates that if we did engage in such business we would doubtless employ some reputable concern to do it for our account.

The force of circumstances abroad has placed us in a position where we are assuming, through foreign relationships, the responsibility for the manufacture of tetraethyl lead. The German plant will start operating this month. We have concluded a contract with Montecatini in Italy for the building and operation of a plant there—which is held up because a plant is already being operated in Italy under a very much more costly operation

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than the process here, but inasmuch as such plant is supplying the needs of the Italian government, we will probably not go ahead with ours during the pendency of the war. The British Air Ministry during the past few months have stated to us that they were on the verge of insisting on our building a plant in England, or furnish them plans so that they could build or have somebody build for them. Last week we concluded an agreement with Imperial Chemical Company to jointly engage in the manufacture of tetraethyl lead in England whenever the Ministry advised that it must be done. We are doing our utmost to persuade the Ministry not to insist until the domestic market would more warrant a small plant than today, but existing conditions may force them to do so. Attached is a copy of a letter we received last week from the office of the Minister of War of France. A representative of ours had an engagement with them yesterday.

I will repeat what I said to you in my letter of October 16, 1935: "I feel confident that, whether we will it or not, or participate in it, there will be a number of other tetra-

ethyl lead plants in operation within the next five years, so that we have passed the point where we can expect to confine indefinitely its manufacture to a single point or to a single company."

I would like to see the duPont Company continue to participate in the manufacture of all our tetraethyl lead for North America, and have told them so repeatedly, and I still think it should be possible to work out a joint manufacturing company with them, and probably along lines submitted in my proposal, especially if there is a will to do so. It seems to me that where we were at one time so near an agreement with them—at least I thought so—except the question of control, above mentioned, that perhaps if one or more of you gentlemen would take it up with Mr. duPont that phase could be worked out satisfactorily. And, failing this, I think we should have a meeting and decide the next step, in the light of Mr. duPont's royalty offer on the "know-how", etc. to apply for the period prior to the time when under our existing contract we will be entitled the same without any

—8—

royalty, so long as we continue to purchase 50% of our requirements from them.

I have been informed by Mr. Howard's office that he is expected back from Europe on the 25th and that Mr. Clark will not be back until about that time, so that we will doubtless defer a Board meeting until they are available.

Very truly yours,

A:C

E. W. Webb

NOTE: In the upper right corner of the first, second, fourth, and sixth pages appears the initial "R"; check marks and underlining are by hand; italics indicate handwriting.

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MEMORANDUM OF AGREEMENT between Ethyl Gasoline Corporation (hereinafter called Ethyl), E. I. duPont de Nemours & Company (hereinafter called duPont) and Standard Oil Development Company (hereinafter called Standard), WITNESSETH THAT:

- (1) A committee made up of representatives chosen by Ethyl, duPont and Standard will examine at once conditions at the refinery of the Standard Oil Company of Louisiana at Baton Rouge, La., and the Humble Oil & Refinery at Baytown, Texas, with a view to the establishment at one or the other location of a new tetraethyl lead and blending plant.
- (2) Standard warrants and agrees that it will arrange with the interested company (Standard of Louisiana or Humble) for a ninety-nine year lease on the selected site running to Ethyl, subject to cancellation in the event that Ethyl or its nominee or sub-lessee should discontinue the use of the plant for anti-knock compound manufacture at any one time for a continuous period of two years. In the event said lease shall be surrendered for failure to use the plant for the purpose and within the time above mentioned, then lessor shall have the right, if it so elects, to pay Ethyl such sum of money as may be determined to be the fair and reasonable value of the plant either by mutual agreement between the parties or by arbitration; and lessor failing so to elect within ninety days time, Ethyl shall have the right to remove plant and improvements located on said land. The lease shall be granted for a rental consideration based on the book value and taxes as they may be fixed from time to time on the property.
- (3) DuPont shall build on the above site one tetraethyl lead plant of the same size and capacity as its existing lead

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units, together with a blending plant of such size as is fixed by agreement between duPont and Ethyl, duPont to assume full responsibility and authority for design and construction of said lead and blending plants, and to have the right to take a sublease from Ethyl, if in its opinion, such a sub-lease is necessary to safeguard its position and responsibility under these conditions.

(4) Before the completion of the plant constructed as above, the

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parties shall endeavor to reach an agreement covering a permanent basis for the ownership and operation of all lead plants, or shall arrive at an agreement covering the permanent relationship between them as regards the operation of the plant in question and extensions thereof.

(5) In the event of failure to reach any agreement as contemplated in (4) above, then Ethyl shall take over the plant on January 1, 1938 provided for in this agreement at the cost thereof to duPont, including interest on the capital invested in the construction, and duPont agrees to assist and license Ethyl for the manufacture of tetraethyl lead therein, subject to the existing contract provisions between Ethyl and duPont, except only that the date of the license from duPont to Ethyl and the accompanying disclosure of "know-how" and technical assistance shall be moved forward as regards this plant or extensions thereof from January 1938,

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as provided in the existing contract, to the actual completion date of the plant in question.

E. W. Webb
Pres.

W. F. Harrington
V.P.

Frank A. Howard
P.

Dated: *July 31, 1936*

NOTE: At lower right of both pages is written "GMC-1010"; in the right margin of the first page, opposite the beginning of the paragraph marked "(3)", appears a small design; italics indicate handwriting.

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MEMORANDUM

Between the summer of last year and about three months ago I discussed on numerous occasions with Mr. Lammot duPont, Mr. Harrington and Mr. Robinson, of the duPont Company, the subject of consolidating the manufacturing and sales interests of our respective companies, but at no time were we able to arrive at a common understanding on any of the basic principles involved in the negotiations.

About three months ago Mr. Robinson and I decided that he and I would attempt to reach an agreement on the basic principles and submit same to our respective Boards for consideration. It was distinctly understood that any conclusions that he and I reached would represent our personal views and would in no manner be binding upon the duPont Company or the Ethyl Corporation.

Mr. Robinson and I have had a number of meetings since this latter idea was first suggested, and last Friday it was decided that rather than he and I trying to reach an agreement on principles we would carry on future negotiations through Mr. Robinson and such other person or persons that might be designated by the duPont Company, and Mr. Howard, and someone to be appointed by Mr. Sloan, and myself, with the understanding that any action the negotiators might agree upon would be subject to the approval of the duPont Board and our Board.

However, I desire to state that Mr. Robinson and I were of the opinion when this decision was reached that the only probable successful conclusion of the negotiations would be predicated upon the following general lines:

- (1) duPont to purchase % interest represented by non-voting stock in the Ethyl Corporation, the purchase

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price to be based upon the capital and surplus of Ethyl as of the date of purchase.

(2) Ethyl to make a long term lease of the duPont lead plants located at Deepwater, New Jersey.

(3) duPont to make an agreement with Ethyl for the operation of the plants at Deepwater for the account of Ethyl on some reasonable fee basis.

(4) The lease and operating agreement above mentioned to run contemporaneously.

(5) duPont and Ethyl to agree upon a basis upon which all costs—direct and indirect—shall be charged by duPont in respect to all items that are involved in the manufacture of tetraethyl lead, including, of course, ethyl chloride and sodium—in connection with the operation of the Deepwater plants.

(6) Ethyl to take over duPont's investment in the plant now in process of construction at Baton Rouge, Louisiana, at cost plus a fair interest charge, and duPont to enter into an agreement with Ethyl to operate the Baton Rouge plant or plants for the account of Ethyl on a reasonable fee basis for a relatively short term (with possible renewal provisions) and that duPont and Ethyl shall agree upon a basis upon which all costs—direct and indirect—shall be charged by duPont for all items that go into the manufacture of tetraethyl lead, including ethyl chloride and sodium; with the understanding that when Jersey or its subsidiary is in position to deliver either sodium or ethyl chloride to the Baton Rouge plant or plants, same will be supplied by Jersey

—2—

or its subsidiary to the Baton Rouge plant or plants provided satisfactory prices can be arranged for such purchases. Ethyl to determine what would be satisfactory prices for such raw materials.

(7) That Jersey and General Motors should, before negotiations have been concluded consolidating the interests of these three companies in this business—reach an understanding between themselves regarding the subject of royalty to be paid General Motors arising out of the combined interests, and that after such agreement has been reached the subject of royalty should be discussed with duPont.

(8) That duPont, General Motors and Jersey will assign to the Ethyl Corporation exclusive rights under any and all manufacturing and use patents which any of them own or control in connection with anti-knock agents and which have not already been assigned; and that duPont will fully disclose to Ethyl the know-how for the manufacture of tetraethyl lead; and that the three companies shall thereafter assign to Ethyl the exclusive rights to any and all patents or applications for patents relating to anti-knock agents, either for a long term period or perhaps so long as the Ethyl Corporation is engaged in the business of selling anti-knock agents.

(9) That after the combination is effective all stock that shall be sold by Ethyl Corporation will be to the three stockholders in proportion to the percentage of their respective holdings in the company.

At the last meeting Mr. Robinson said that in the event the combination should become effective he felt the duPont

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Company should have two representatives on our Board.
I told him that was a matter that I thought I should not
discuss.

E. W. Webb

November 24, 1936.

NOTE: At upper right of first page is written "Ethyl-
Org.-Reorg.-Mfg. Activities" beneath which is written
"12/21/36"; at upper right of first page is stamped "Re-
ceived Nov 24, 1936, A. P. Sloan, Jr."; at upper right of
both pages is written a small "h"; at the bottom of first
page is drawn a circular scrawl.

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NOTES ON LETTER FROM MR. HOWARD,
JAN. 13, 1937, AND THE ATTACHED MEMO.

Why only 10% on business in excess of 53,000,000 lbs.? We have just the same responsibility for operating and have also to contribute toward new capital.

Sharing of new capital.—Under arrangement proposed we would contribute $33\frac{1}{3}\%$ of capital for first plant at Baton Rouge, since it is being built in 1937 and under Paragraph VII the basis of distribution of profits for the preceding year 1936 would be used. On the other hand, we are supposed to get only 10% of the profits from that plant.

20% interest in new development.—this would not give us any incentive to carry on research work, but would even be a definite deterrent since we would not want to see ourselves reduced from $33\frac{1}{3}\%$ to 20% through our own efforts. Surely we can be expected to have as good chance of submitting something new as can either of the other two if we eliminate this present new compound about which they have told us. We recognize the psychological disadvantage of providing that a royalty should be payable to any one of the three partners presenting a new compound since that works against full cooperation in research efforts.

(In this connection, in discussing this particular provision with Mr. Howard on the telephone on Jan. 21st, he stated that we would get the $33\frac{1}{3}\%$ share on a new compound as well as the old one (T.E.L.). This statement is quite inconsistent with the evident intent of the memo attached to his letter of Jan. 13th, and I think the statement was made inadvertently. However, it might show something about the way he is really thinking.)

7% return on Sodium Investment.—This is probably a lower figure than we would be willing to accept. In the

Not if we get
 $\frac{1}{3}$ of profits
of business

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1936 calculation even if a higher return were allowed the portion of the profits coming from Sodium would be sufficient to lead

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to a $33\frac{1}{3}\%$ share. Since later it is proposed that we sell Sodium to both plants at a price to give us 7% return, the magnitude of the allowance is of direct importance.

Pooling of future patents.—Is there any question of the legality of this provision in view of the fact that General Motors and Standard Oil have apparently already agreed to such an obligation.

In connection with the building of new plants, we are to agree to put up some of the money and also to build new Sodium equipment to correspond. Who is to say when such new plants are needed and whether or not they are simply serving to decrease the amount of business to be handled at Deepwater.

We do not know what is meant by saying that duPont is to operate the plants "under the direction of Ethyl". Certainly they can direct the operation only in the most general

product
terms as, for example, by saying how much ^A is to be made.
dealing

The provision in Paragraph VII with contribution of new capital, which provides that General Motors shall furnish a larger proportion of new capital than does Standard Oil, if this new capital is not for manufacturing purposes it seems to us to be inconsistent with their present relations as we understand them. This is of course primarily a matter to concern General Motors. The same remarks apply to Paragraph 3-D on Page 5, but this is probably a provision which does not affect our own share at all.

It should be noted that the figure of \$13,173,000 mentioned as the original cost of these plants really includes

facilities. "Attached memo" from Howard begins here

-3-

D. du Pont shall have no interest in any operating profits or any sums obtained by the sale or licensing of the

20%

business, good will, or patents of Ethyl outside of the U.S. Exports of goods from the U.S. however to be under A, B and C above, export price to be the same as U.S. prices until foreign supplies are available after which any exports shall be at a price competitive with such available foreign supplies.

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2. To effect a settlement between the du Pont Company and Ethyl which will result in making their interests for the future absolutely common, and give to the du Pont Company the above percentage of the total profits, the following mechanism is proposed:

A. Ethyl Corporation to authorize an issue of 7% preferred stock (non-voting) or income notes if the latter have any tax advantage, sufficient to take over the du Pont investment in lead and ethyl chloride plants. Original cost of these plants was \$13,173,000. Present book value necessarily less.

B. Ethyl Corporation to purchase from the du Pont Company at present book value, the tetraethyl lead and ethyl chloride manufacturing plant at Deepwater, paying therefor in its own 7% preferred stock or income notes as above.

C. Ethyl Corporation and du Pont will enter into a lease, license and operating agreement as follows:

I. du Pont leases to Ethyl the land on which the lead and ethyl chloride operations at Deepwater are conducted, the lease to run so long as du Pont uses the plants (or any other plants on this site) for Ethyl's anti-knock business. When no longer so used the lease should terminate and the improvements be removed, or sold to du Pont at their then value if any for other manufacturing purposes. Lease will

taxes on

provide that taxes on land as well as improvements will continue to be paid by du Pont as heretofore.

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II. du Pont grants to Ethyl an exclusive license under the present and future world patent rights of du Pont in the anti-knock field, as the same is already defined between G.M. and S.O.

As to vol. only

Present?

III. du Pont agrees to manufacture ^{anti knock compounds} in the plants at Deepwater and any other plants under the control of Ethyl within the U.S., under the directions of Ethyl so long as Ethyl shall be engaged in the anti-knock business.

IV. du Pont agrees that when and if #6 lead plant shall
by Ethyl

be authorized for ^A B.R. it will build at B.R. a sodium manufacturing plant capable of supplying both B.R. plants and will increase such plant as necessary to meet the future requirements of the B.R. lead plant, with a view to building up and maintaining at B.R. sodium capacity entirely independent of Niagara Falls and adequate to the lead business conducted at B.R.

V. du Pont agrees to supply the sodium requirements of B.R. and Deepwater at cost (including a 7% return on the investment).

Return @ 7% on
Sodium Invest?
And under
2-C VII,

VI. As compensation in full to du Pont for the foregoing, du Pont shall be entitled to receive from Ethyl each year an amount which added to the dividends on the preferred stock taken by du Pont under 2-B, shall give the total percentage to which du Pont is entitled under 1. This result may be obtained by adjusting the sale price of lead from du Pont to Ethyl.

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2-C-

VII. All future requirements of capital for the Ethyl Company for improvements or extensions at Deepwater,

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B.R. or elsewhere shall be supplied by the parties in the proportion of their interests in the earnings as of the last preceding year, and without issuance of any securities which

20%

Issue of Pfd?•

but with issue of 7% Pfd stk
change the present distribution of voting control. Since G.M.'s royalty is not payable on profits from manufacture the royalty shall not be considered in figuring G.M.'s participation in earnings for the purpose of supplying new capital required for manufacturing purposes but shall be so considered as regards any new capital required for other purposes.

*du Pont research
will practically
stop as to Anti
knocks*

VIII. Ethyl and du Pont shall freely exchange all information in the field of anti-knock compounds. du Pont shall not give to any one else anywhere in the world any of its technical knowledge or experience in the manufacture of anti-knock compounds. Ethyl shall not give same to any one other than du Pont in the U.S.

3. MISCELLANEOUS MATTERS.

A. The B.R. lead plant shall be taken over as to the investment and title by Ethyl, du Pont continuing to have full responsibility for construction and operation. Capital required for this plant shall be supplied under 2-VII.

B. S.O. shall be obligated to take and shall have the right to take the entire chlorine production of the B.R. sodium plants at the lowest price or cost at which it could secure chlorine by any other method, and in figuring such cost or price a return of 7% per annum on the required investment

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shall be used. S.O. shall offer to supply Ethyl with ethyl chloride at B.R. on a competitive price basis as soon as the chlorine above referred to is available.

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C. Since no ethyl chloride can be made available at B.R. in time for starting of the #5 lead plant, the necessary additions should be made by du Pont at Deepwater for du Pont's own account and risk, and du Pont shall supply ethyl chloride for B.R. from these additions on a contract basis, term and price being adequate to compensate du Pont for this investment, having due regard to the possibility that du Pont will be able to use these facilities for other purposes within a reasonable time. In the event no agreement can be reached as to price and terms, S.O. shall guarantee the du Pont investment at Deepwater, du Pont shall operate the same at cost for the account and risk of S.O., and S.O. shall contract with Ethyl for the supply for B.R., reserving right to supply either from Deepwater or from its own new plant at B.R. Price shall be the competitive price at B.R. and the contract shall be of reasonably long term, envisaging supplies for the greater portion of its life from new plants at B.R., the Deepwater plant being regarded as a temporary supply source only.

D. For the purpose of calculation of the G.M. royalty, there shall be allocated as earnings due to manufacture of anti-knock compound the same percentage on all business which du Pont gets on the first 53,000,000 pounds of tetraethyl lead. That is the difference between this percentage

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and the percentage paid to du Pont on the additional quantities of tetraethyl lead and on other anti-knock compounds shall be assumed to be earnings of the Ethyl Co. itself derived from the manufacture but not the sale of anti-knock compounds.

E. The preferred stock paid to du Pont for its plant under 2-C-VI shall contain a provision permitting Ethyl

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to withhold earnings sufficient to compensate its common stockholders at the same rate as the preferred stock dividend for their actual investment in Ethyl, so that if total earnings are less than adequate to pay interest at this rate on all capital in the business, such earnings as are available shall be divided ratably between common and preferred dividends in proportion to the book value of invested capital each represents. Also the preferred stock should not have any preference in distribution of assets in case of liquidation, except ratably with the common in proportion to the investment each represents as above. Provision has already been made for sharing the burden of the new capital requirements between the three parties, and it is understood that such new capital should be served before the old capital of any of the parties, represented by the Ethyl common stock and the preferred issued under 2-C-VI.

FAH/CFG

1/13/37

NOTE: At lower right of first and second pages is written "GMC-577"; at upper left of first page is written "Mr L. du Pont"; at upper right of first page is stamped "Received Jan 27, 1937, Lammot du Pont"; on the third page a circle is drawn around the figure "10%" (in paragraph 1 B) and a line drawn to the figure "20%" in the right margin; in the lower right hand corner of the third and succeeding pages is written "GMC-577a"; the figure "7%" (in paragraph V of the fifth page) is underlined by hand and a line is drawn to the notation in the left margin beginning "Return @ 7%"; underlining and marginal lines are by hand; italics indicate handwriting.

THIS AGREEMENT, made as of the 2nd day of March, 1937, by and between ETHYL GASOLINE CORPORATION, a corporation organized and existing under and by virtue of the laws of the State of Delaware (hereinafter called "Ethyl"), and E. I. DU PONT DE NEMOURS AND COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Delaware (hereinafter called "du Pont").

WITNESSETH THAT

WHEREAS, the above-mentioned parties and Standard Oil Development Company, a corporation of Delaware, have entered into a certain Memorandum of Agreement dated July 31, 1936, which agreement, among other things, provides for the construction by du Pont of a tetraethyl lead plant or unit together with a blending unit, on certain property situate in the Parish of East Baton Rouge, State of Louisiana; and

WHEREAS, the parties hereto are desirous of entering into a further agreement in connection with additional construction and industrial activities, which is to be construed as being supplementary to the above said Memorandum of Agreement dated July 31, 1936.

NOW, THEREFORE, for and in consideration of the mutual covenants, conditions, terms and promises herein contained to be faithfully performed by the respective parties hereto, it is agreed between the said parties hereto as follows:

- (1) Du Pont shall construct a manufacturing unit for the production of tetraethyl lead of approximately the same size and capacity as the present tetraethyl lead unit now undergoing construction by du Pont on certain land owned

by Ethyl in the Parish of East Baton Rouge, Louisiana, said unit to be constructed on the same land as the present unit is being constructed by du Pont. The aforesaid construction site is the same premises described in a certain Indenture dated September 4, 1936, executed by King Harding Knox to Ethyl Gasoline Corporation, and registered in the Conveyance Records of East Baton Rouge Parish, Louisiana. In addition thereto du Pont shall further construct a blending unit for the manufacture or production of compounds containing tetraethyl lead and other ingredients on the aforesaid land of approximately the same size and capacity as the blending unit which is now under construction by du Pont on said land. It is the intent and purpose hereof that du Pont shall double the production capacity of the present tetraethyl lead unit and blending unit, which at the time of the execution of this agreement, are under construction by du Pont by virtue of that certain Memorandum of Agreement dated July 31, 1936, referred to above.

(2) Du Pont shall have the complete and absolute discretionary right to use such construction materials and to adopt and use such engineering, mechanical or architectural designs or plans as it may deem advisable to accomplish the construction of the tetraethyl lead unit and blending unit described in Article 1 hereof. Further du Pont shall carry on the above said construction work in such a manner as to coordinate and combine, wherever in its judgment it deems

advisable and practical, structural and mechanical features, servicing facilities, fixtures, pipe lines, tracks, other improvements, etc., of the aforesaid tetraethyl lead unit and blending unit, described in Article 1 hereof, with the present tetraethyl lead unit and blending unit under construction

at this time by du Pont. It being the general purpose hereof that when all construction work has been completed by du Pont in fulfillment of this supplementary agreement and the aforesaid Memorandum of Agreement of July 31, 1936, the said two tetraethyl lead units with their blending units will represent a coordinated entity.

(3) The entire cost of the construction of the tetraethyl lead unit and blending unit described herein shall be loaned by Ethyl to du Pont without interest. Such loan or loans shall be paid promptly to du Pont by Ethyl in accordance with monthly requests in advance made by du Pont to Ethyl, and such requests shall be based on du Pont's estimates of the costs which will probably be incurred by it during the ensuing calendar month. Du Pont shall execute proper evidences of this indebtedness in the form of non-negotiable notes at the time the loans are made as provided herein, which notes shall fall due and be payable without interest on January 1, 1938, provided, however, that du Pont shall have the right of an extension of said date of repayment in the event the construction work herein described has not been finally completed, until such time as said construction has been finally completed.

(4) Legal title to the tetraethyl lead unit and blending unit described herein shall remain vested in du Pont until

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January 1, 1938, or until such time as the construction work thereon shall have been finally completed, at either of which last said dates or prior thereto, the parties hereto shall endeavor to reach an agreement with respect to the legal ownership and operation thereof as provided for in Paragraph 4 of the aforesaid Memorandum of Agreement dated July 31, 1936. In the event of failure to reach any agree-

ment as set forth in Paragraph 4 of the above said Memorandum of Agreement of July 31, 1936, then legal ownership of said tetraethyl lead unit and blending unit shall be transferred in accordance with Paragraph 5 of the said Memorandum of Agreement of July 31, 1936. And further the other provisions of the aforesaid Paragraph 5 shall be binding upon du Pont.

(5) In the event legal title to the tetraethyl lead units and blending units, which are being constructed by du Pont under this agreement and under the prior Memorandum of Agreement of July 31, 1936, shall be transferred by du Pont to Ethyl; then Ethyl shall accept assignment of and assume all obligations and liability thereunder of any and all contracts, right-of-way agreements, leases, easements and licenses whatsoever, then unexpired and in force and effect, which du Pont may have entered into relating to the construction or future operation or the furnishing of supplies and power facilities, including steam, gas, electricity and waste disposal, for the said tetraethyl lead units and blending units.

(6) Du Pont shall keep accurate records at all times of all amounts expended by it in the aforesaid construction work and Ethyl shall have the right to inspect same

—5—

at reasonable intervals; and further Ethyl shall be entitled to a full and complete statement of all such expenditures at the end of three-month periods beginning March 15, 1937 and ending at the final completion of said construction work.

(7) This agreement shall not be assigned by either party hereto without first having obtained the written consent of the other.

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IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their proper officers, duly authorized thereunto, as of the day and year first above written.

ETHYL GASOLINE CORPORATION

By *E. W. Webb*

President

[CORPORATE SEAL]

Attest:

(illegible)

Ass't. Secretary

E. I. DU PONT DE NEMOURS AND COMPANY

By *W. F. Harrington*

Vice-President

[CORPORATE SEAL]

Attest:

E. A. Howard,

Ass't Secretary

ACCEPTED BY :

STANDARD OIL DEVELOPMENT COMPANY

By *Robert P. Russell*

Vice-President

[CORPORATE SEAL]

Attest:

W. F. Quick

Ass't. Secretary

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NOTE: At lower right of all pages appears "GMC-1010a"; at lower left of all pages appears the mirror image of a stamp all of which is obscure except the date "Jun 2, 1937"; in left margin of last page opposite signatures of representatives of du Pont Company is stamped "Form approved Legal Department . . . Asst. Director"; the name "H. C. Haskell" is written in the space provided in this stamp; beneath this stamp are written "E G R" and illegible initials; in the right margin of the last page opposite the words "Standard Oil Development Company" appear illegible initials; italics indicate handwriting.

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July 30, 1937.

Messrs. Lammot du Pont
W. S. Carpenter, Jr.
J. Thompson Brown
Jasper E. Crane
A. B. Echols
T. B. Grasselli
→ W. F. Harrington
C. M. A. Stine
E. G. Robinson

TETRA ETHYL LEAD:

The du Pont Company now has a contract with the Ethyl Gasoline Corporation in which, under Paragraph 11, it is provided that in 1938 du Pont will put the Ethyl Gasoline Corporation in position to manufacture TEL by building for them a plant, providing the "know-how" for operation; and giving them the right to operate any patents that du Pont now has pertaining to the TEL operation. The situation has developed so far to a point where one plant is almost completed for account of Ethyl and another plant authorized and work started.

Paragraph 11 further provides that in the event Ethyl use the du Pont patents they will purchase from du Pont 50% of their requirements at a price to be agreed upon for a period covering the life of the patent, which expires early in 1944. There is no provision in Paragraph 11 requiring du Pont to disclose to Ethyl any information with respect to sodium manufacture. Operating under this paragraph it is possible for Ethyl to increase their capacity up to 50% of their requirements as quickly as plants can be built; and in the event they can operate without using du Pont patents

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they could eliminate the necessity of purchasing any material from du Pont, depending on how

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fast they could install their own manufacturing facilities. It is conceded that they could manufacture TEL, without using du Pont patents, at an increase in cost of not over 5 - 6¢, which would give them a total cost (provided they could get a fair price on sodium) not greater than the price they are now paying du Pont for TEL.

Obviously, this is a most unsatisfactory position from du Pont's standpoint and an effort has been made to come to a new agreement which provides for the leasing of the present Deepwater plants to Ethyl for a period of seven years, du Pont to receive compensation based on the profit made by Ethyl during this period amounting to approximately one-third of the profits, which should give du Pont a satisfactory return in that it very closely approximates the remuneration it is now receiving. However, there are two very weak points in this arrangement from du Pont's standpoint:

1. Du Pont has no control over the amount of profit to be made by Ethyl, in that du Pont has no voice in the fixing of prices;
2. This agreement terminates in 1945, or at the expiration of the first use patent and three years prior to the expiration of Ethyl's second use patent.

This arrangement obviously protects Ethyl in that they have three years to build additional capacity, during which time they will have an opportunity of strengthening their

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position in the market. In the meantime, du Pont plants might be closed down as fast as Ethyl's new capacity could be brought in; du Pont's personnel dispersed, and the operation partially dismantled through the removal of any equipment that has been put in during the 7-year period.

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Du Pont's only alternative would be to replace the equipment; continue operations, and attempt to protect its position in the market by violating the second use patent and taking its chances on such litigation as may develop. It seems to me that any agreement providing for such an eventuality has no mutuality. It is economically unsound and leaves out of consideration any intention of cooperation.

I fully recognize that the 7-year agreement as now drawn up, with the exception of a few minor changes which can undoubtedly be taken care of, is an improvement from du Pont's standpoint over Paragraph 11 of this present agreement, and I would prefer in the event of no other alternative to operate under the provisions of the new agreement, taking my chances on the situation as it may exist at the end of the 7-year period. However, it seems worth while to advise Ethyl of the unsatisfactory phases of this new agreement from du Pont's standpoint in an attempt to secure from them recognition of the unsound position in which du Pont is placed. If it is Ethyl's and du Pont's desire to cooperate, the 3-year period should be cured and the contract made for ten years, or the life of the second use patent. It may be said that du Pont has nothing to offer as an inducement to Ethyl to cure this 3-year period, but it does seem that du Pont is in its strongest position today when it has the manufacture of sodium as a trading point in securing this concession. I

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do not agree that under the terms of the new agreement with respect to sodium du Pont is adequately

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compensated. The proposed agreement with respect to sodium should be satisfactory to du Pont provided Ethyl is willing to recognize that du Pont has a position in this industry and is willing to cure the 3-year period. Certainly, du Pont would not be expected to sit idly by with an investment in four up-to-date TEL plants, ready to operate, without making an attempt to utilize those plants and get some return on its investment.

If the Ethyl Gasoline Corporation persist in their refusal to cure the 3-year period on the basis of terms of compensation in the proposed agreement or to provide for purchase during the 3-year period of 50% of their requirements up to the capacity of these four plants at a figure which might be represented by cost plus 10% or better, the indications would seem to be pretty clear that it was their intention to terminate the contract at the end of seven years and close these plants down as soon as they could provide their own facilities. The approach would at least be improved if they would agree at the end of the seven years to purchase 50% of their requirements up to the capacity of these four plants on a cost plus 10% + basis, the contract to renew itself annually unless cancelled by either party on 12 months' notice and for good and sufficient reasons. At least we could feel it was their intention to continue to purchase the output of these plants and on a basis which could be defined as mutually satisfactory to the two parties entering the agreement.

J. W. MCCOY

NOTE: At lower right of all pages is written "GMC-580"; a pencilled arrow points to the name of W. F. Harrington on the first page.

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IRÉNÉE DU PONT

WILMINGTON

DELAWARE

December 20, 1937

Mr. Alfred P. Sloan, Jr.
General Motors Corp.
57th & Broadway
New York City

Dear Alfred:

I am attaching hereto my formal resignation as a member of the Board of Directors of the Ethyl Gasoline Corp., and a short letter to Mr. Webb explaining it. I think that Don can tell you the feeling of the Finance Committee of the Du Pont Company better than I can write it.

I am transmitting them through you, to be used when you deem it advisable, but I presume before the meeting of January 3rd, next, when the contract in question will be considered by the Ethyl Gasoline Board.

Yours sincerely,

Irénée du Pont

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NOTE: At upper right is stamped "Received Dec 21, 1937, A. P. Sloan, Jr."; to right of address is written an illegible initial; marginal line is by hand; italics indicate handwriting.

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Directors—6.

C O P Y

Irenee du Pont
Wilmington
Delaware

December 20, 1937

Mr. E. W. Webb, President
Ethyl Gasoline Corp.
135 E. 42nd Street
New York City

Dear Mr. Webb:

I am attaching my formal resignation as a Director of the Ethyl Gasoline Corporation. This is tendered because it is the feeling of our Finance Committee that it might be better that the Du Pont Company should not have even such a representative as myself on the Board at a time when this Company is negotiating with the Ethyl Gasoline Corporation on a very important and far-reaching contract.

I want to say that I have enjoyed the association with the Ethyl Gasoline Corporation ever since its conception and though, of course, I have sometimes disagreed with the majority on matters of policy, yet at the same time, I have always felt that all of you were using the utmost of intelligence and that perhaps I was on such occasions the one "unruly juror".

Yours sincerely,

Signed - Ireneé duPont

NOTE: In upper right is written "A-6".

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To: Policy Committee,

FROM: Chairman.

SUBJECT: AGREEMENT BETWEEN ETHYL GASOLINE CORP.
AND E.I. DU PONT DE NEMOURS & CO.
COVERING MANUFACTURE OF TETRAETHYL
LEAD

December 31, 1937.

Since 1924, E. I. du Pont de Nemours & Company has supplied the Ethyl Gasoline Corporation with its tetraethyl lead requirements, carrying on manufacture at the du Pont Company plants located at Deepwater Point, New Jersey. Tetraethyl lead has been supplied under annual contracts which have specified a fixed price per pound for the lead for the ensuing year. The basic patents covering tetraethyl lead which expire at the end of 1947, are held by the Ethyl Company under an exclusive license agreement with General Motors; but the du Pont Company, has of course, developed manufacturing processes and acquired an operating technique over this period which it would be difficult to duplicate. As a result of this operating arrangement, the Ethyl Company has been principally a selling activity, with relatively low capital requirements, and has not been obliged to undertake any of the construction expenditures in connection with manufacture.

During this 13-year period, as set forth in Schedule I, the tetraethyl lead volume has grown from a nominal volume in the early years to one of 50,600,000 pounds a year in 1936 and an estimated volume of 65,000,000 pounds in 1937. This volume is beyond the amount that can be handled by the Deepwater plant facilities, and some time ago it was considered advisable to proceed with the construction of additional plant facilities in Baton Rouge, La., where it was

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estimated that the manufacture of the additional lead requirements could be carried on favorably from a cost standpoint. This immediate plant expansion will involve construction expenditures to the end of 1938 estimated at between \$9,500,000 and \$11,500,000, and will provide for a total volume of 75,000,000 to 88,000,000 pounds of tetraethyl

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lead annually. Working capital requirements will amount to about \$4,000,000 more, bringing the additional manufacturing capital for this volume to between \$13,500,000 and \$15,500,000. On or before the end of 1937, the Ethyl Company will be required to reimburse the du Pont Company in the amount of approximately \$3,600,000 for construction expenditures at Baton Rouge which have been made for the account of the Ethyl Company.

At the same time, the Ethyl Company management has considered the advisability of arranging an operating agreement with the du Pont Company covering the manufacture of tetraethyl lead over a longer term of years than the year to year arrangement now in effect. In the preliminary negotiation, the du Pont Company stated that its billing prices, from year to year, have been predicated on the basis of the du Pont Company enjoying a manufacturing profit approximately one-half the total profits being enjoyed currently by the Ethyl Company. In other words, the du Pont Company has assumed that the manufacturing profit should approximate one-third of the total profits resulting from the manufacture and sale of tetraethyl lead. As the Ethyl Company has reduced its selling price to its customers and increased its volume, the billing price by the du Pont Company has shown somewhat similar reductions. The profit history of the Ethyl Company is set forth in Schedule I, and

the General Motors participation in such profits, including its royalty on the sale of tetraethyl lead, is shown in Schedule II. The stock of the Ethyl Company is now held 50% by Standard Oil Company of New Jersey, 49.7% by General Motors and 0.3% by the du Pont Company (who acquired 50 shares of the Ethyl Company stock from General Motors in December 1935).

In line with the desire to effect a longer term operating agreement with the du Pont Company, and with the understanding that the Ethyl Company would take over the responsibility of furnishing the capital required for additional plant capacity, agreements have been worked out between the du Pont Company and the Ethyl Company. These agreements are summarized in Exhibit A, and the several agreements are set forth in complete detail in Exhibit B. Since this arrangement will necessitate the stockholders

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of the Ethyl Company investing a considerable amount of new capital over the next few years in order to build the additional plant facilities required, the proposal is at this time being submitted to your Committee for consideration.

General Terms of the Proposal

The proposal contemplates that the Ethyl Company will engage in both the manufacture and sale of tetraethyl lead. The actual manufacturing operations, however, will be carried on by the du Pont Company for the account and risk of the Ethyl Company. The present Deepwater plants (representing a net capital investment of around \$6,500,000) will be leased to the Ethyl Company at a nominal rental. In addition, the service facilities (electricity, water, steam, etc.) which would be required by the leased

plants, amounting to an investment of \$2,000,000, would be available to the Ethyl Company on a 7% return basis.

The additional plant investment required includes lead, ethyl chloride and sodium plants at Baton Rouge which are either now under construction or are to be started shortly. The capital required for the construction of these new plants, as well as the working capital required in the operation of both the Deepwater and Baton Rouge manufacturing activities, will be furnished by the Ethyl Company. Such additional capital requirements will be secured through the issuance of seven year, seven per cent bonds, callable on any interest date at par, which are to be taken up by Standard Oil, General Motors and the du Pont Company in the same proportions as are provided for the distribution of profits (as outlined later), except for bonds issued for Lead Plant No. 5 at Baton Rouge for which the du Pont Company will take up an agreed amount of \$500,000.

The proposed contract between the Ethyl Company and the du Pont Company sets forth the terms under which the du Pont Company will construct the lead and sodium plants for the Ethyl Company at Baton Rouge, La. The contract also covers the terms under which the du Pont Company will operate, for a period of seven years, both the existing facilities at Deepwater as well as the facilities now under construction at Baton Rouge. The operations at Deepwater and Baton Rouge are treated separately in the proposal, with the

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Ethyl Company having the right to cancel the operating agreement as to the Baton Rouge sodium and lead plants on one year's notice. The Ethyl Company will keep on deposit, without interest, with the du Pont Company during the operation of the said plants, sufficient funds to cover

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the du Pont Company's working capital requirements, including current purchases and work in process.

As mentioned above, the manufacturing service agreement between the Ethyl Company and the du Pont Company will cover a period of seven years, 1938-1944. During this seven year period, the du Pont Company will operate both the Deepwater and Baton Rouge plants (other than the ethyl chloride plant to be erected at Baton Rouge early in 1938) and in this connection will grant to the Ethyl Company licenses for the use of all the du Pont Company's patents relating to the manufacture of sodium and tetraethyl lead used in anti-knock compounds. These licenses, with respect to the manufacture of tetraethyl lead, will be granted royalty free, but those granted in connection with the manufacture of sodium at Baton Rouge (which covers a period of ten years) will be subject to a royalty of 2¢ per pound produced for the first 100,000,000 pounds; 1¢ per pound for the next 100,000,000 pounds; and ½¢ per pound for the balance. The present estimated sodium requirements are 10,000,000 pounds a year. Provision is made for the remission of part or all of this sodium royalty to the extent that the actual sodium cost proves to be greater than that provided under the formula set out on page 15 of the manufacturing service agreement. Based on this formula, the Ethyl Company is, in effect, guaranteed, on an over-all basis, against any wastage in materials or labor, but is not guaranteed against increases in material or labor prices.

Under the terms of the manufacturing service agreement, the Ethyl Company agrees to reimburse the du Pont Company monthly for the full cost (including the cost of materials supplied as well as other expenses incurred) to the du Pont Company of operating the plants at Deepwater and Baton Rouge for the Ethyl Company. Except for

certain costs (including material costs) which are described in detail in the agreement; all items included in the costs for which the du Pont Company will be reimbursed will be determined in accordance with the du Pont Company's methods of accounting existing at the present time, with such modifications to reflect changed conditions as may be fixed by mutual agreement. The du Pont Company agrees, however, to keep complete accounting records showing the cost of each item and to give the Ethyl Company unconditional access thereto.

A summary of other cost items (including materials) which are important in the operation of the Deepwater and Baton Rouge plants are described in detail beginning on page 2 of the manufacturing service agreement. These include the entire ethyl alcohol, sulphuric acid, and caustic soda requirements which are to be supplied the Deepwater plant at the current market prices. Sodium requirements of the Deepwater plant are to be supplied at the du Pont Company's cost plus 7% return on the du Pont Company's investment. Any ethyl chloride required in addition to that which is produced at the Deepwater chloride plant will be supplied by the du Pont Company at a price not to exceed the cost of the ethyl chloride produced in the leased plant. In the case of the Baton Rouge plant, the proposal provides that the du Pont Company will supply the entire requirements of ethyl chloride for the 21 month period, January 1, 1938 through September 30, 1939, and the sodium requirements until such time as the Baton Rouge plant is placed in operation.

The manufacturing service agreement also treats with such indirect costs as depreciation, service facilities, "idle" and "stand-by" expenses, research expenses, insurance re-

serves and general overhead; and further provides that the du Pont Company's costs will include a fair proportion of the du Pont Company's overhead at the Wilmington office, as well as any other indirect expense applicable.

During the period that the du Pont Company operates these plants, the du Pont Company will communicate to the Ethyl Company the scientific, technical,

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engineering and other information which the du Pont Company has developed in connection with the manufacture of the various products. The licensing agreement provides that the parties will endeavor to negotiate an extension subsequent to the seven year period ending December 31, 1944 on terms that will permit each to continue in the anti-business

knock/with substantially the same financial return as may exist as of the time of termination. If they do not reach such an agreement, the Ethyl Company must offer to purchase at least one-half of its anti-knock compound requirements from the du Pont Company if the Ethyl Company desires to continue manufacturing such products using the du Pont Company's licenses. The du Pont Company may accept part of the Ethyl Company's total offer, but in no event less than its plant capacity. The purchase price to the Ethyl Company for such anti-knock compound shall be such as to yield a net profit to the du Pont Company, before income and profit taxes, as follows:

- (1) For the three years, 1945-1947, the du Pont Company shall be paid 50% of the net profits of the Ethyl Company resulting from the manufacture, purchase and sale of the first 53,000,000 pounds of tetraethyl lead; and 11½% of the balance of the profits on manufacture, purchase and sale of tetraethyl lead over 53,000,000 pounds. We interpret

this to mean that the du Pont Company will receive 50 cents of profit from every \$1 that the Ethyl Company receives, which is the same basis as under the previous agreement.

- (2) For the year 1948, the du Pont Company shall be paid a price per pound of tetraethyl lead sufficient to yield the du Pont Company a net profit per pound before taxes equal to the average during the preceding three years.
- (3) For the year 1949 and subsequent years, the price per pound is to be settled by arbitration.

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Basis For Payment to the du Pont Company

The proposed agreement provides that the compensation to the du Pont Company for its services in connection with the carrying on of the manufacturing operations for the Ethyl Company will be based upon the manufacturing profits. Manufacturing profits, for this purpose, are defined as one-third of the total profits to be derived from the manufacture, purchase and sale of tetraethyl lead and any other anti-knock compounds and the manufacture of materials composing the same. The balance, or two-thirds of the total manufacturing and selling profits, will be considered applicable to selling operations. This distribution of total profits reflects the basis upon which the du Pont Company has based its billing prices in the past (i.e., to secure one-third the aggregate profits from the manufacture and sale of tetraethyl lead). The compensation to the du Pont Company under the agreement will be as follows:

- (a) 100% of gross manufacturing profits of the Ethyl Company from the manufacture, purchase, and

sale of tetraethyl lead and/or mixtures thereof with other substances up to an aggregate amount of \$3,000,000 pounds of total tetraethyl lead content; and

- (b) 30% of gross manufacturing profits of the Ethyl Company from the manufacture, purchase, and sale of tetraethyl lead and/or mixtures thereof with other substances over and above this minimum volume; and
- (c) 60% of gross manufacturing profits of the Ethyl Company from the manufacture, purchase, and sale of anti-knock compounds other than tetraethyl lead and/or mixtures thereof with other substances; and
- (d) A portion of the Ethyl-Dow Company dividends not to exceed in any year a maximum of 16½% of the total dividends received by the Ethyl Company from the Ethyl-Dow Company.

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There follows an example of the calculation of the du Pont Company's compensation, assuming 1938 earnings show no increase over 1937, as shown in Schedule III. At present, the Ethyl Company has no sales of anti-knock compounds other than tetraethyl lead and lead mixtures so that the du Pont Company would receive no compensation under the provision contained in item (c) above.

Sales of Tetraethyl Lead—In Pounds	72,000,000
Total Gross Profits (after Interest on Funded Debt)	\$22,899,000
Less Ethyl-Dow Dividends (After Taxes)	985,000
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Gross Operating Profits Before De- ducting Royalty Payable to General Motors	\$21,914,000

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Royalty Payable to General Motors	\$ 2,708,000
Gross Operating Profits	\$ 19,206,000
Gross Manufacturing Profits ($\frac{1}{3}$ of Gross Operating Profits of \$19,206,000)	\$ 6,402,000
Compensation to the du Pont Company:	
Based on Manufacturing Profits:	
(a) 100% of $\frac{53,000,000}{72,000,000} \times 6,402,000$	\$ 4,713,000
(b) 30% of $\frac{19,000,000}{72,000,000} \times 6,402,000$	507,000
Total Compensation Based on Manufacturing Profits	\$ 5,220,000
Based on Ethyl-Dow Dividends:	
(d) $\frac{5,220,000}{2} \times 985,000$	134,000
Total Compensation to the du Pont Company	\$ 5,354,000

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If, in any two successive years, the compensation under this agreement proves to be less than 7% on the gross capital invested by the du Pont Company in the Deepwater plants leased to the Ethyl Company (representing an annual payment of approximately \$450,000), the Ethyl Company will be obliged to bring up the compensation to this minimum level, or the agreement and lease will be subject to termination. In addition, as stated previously, the Ethyl Company is required to pay the du Pont Company in each year a 7% return on the Deepwater service facilities investment of \$2,000,000 (representing an annual payment of approximately \$140,000).

The allocation of profits on the basis of this agreement, under various assumptions, is set forth in Schedule III. These data have been developed on the basis of a volume

increase of 10% annually over the 1937 volume with (1) no increase in profits over 1937 and (2) a decrease in profits of 5% annually from 1937 and (3) an increase in profits of 5% annually over 1937.

Royalty Payments to General Motors Corporation

Under the royalty agreement between General Motors Corporation and Ethyl Gasoline Corporation, which runs with the patents that expire in 1947, there is payable, as royalty, 25% of the net selling profits on the sale of anti-knock compounds covered by the patents, less 22½% on capital employed in the selling operations. The proposed arrangement with the du Pont Company, by fixing manufacturing profits at one-third of the total profits, thereby determines the selling profits upon which the royalty will be based. Eliminating the effect of non-royalty income (such as dividends from the Ethyl-Dow Company stock)

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which is not subject to royalty, the following example has been prepared assuming 1938 earnings show no increase over 1937, as set forth in Schedule III:

Total Gross Profits (After Interest on Funded Debt)	\$22,899,000
Less Ethyl-Dow Dividends (Net)	985,000
Gross Operating Profits Before Deducting Royalty	
Payable to General Motors	\$21,914,000
Royalty Payable to General Motors	2,708,000
Gross Operating Profits	\$19,206,000
Less Gross Manufacturing Profits ($\frac{1}{3}$ of Gross Operating Profits)	6,402,000
Gross Selling Profits ($\frac{2}{3}$ of Gross Operating Profits)	\$12,804,000
Less Bonuses to Employees	600,000
Net Selling Profits Before Taxes	\$12,204,000
Less Federal Income Taxes (15%)	1,830,000
Net Selling Profits After Taxes	\$10,374,000

Proof of Royalty:

Net Selling Profits After Taxes	\$10,374,000
Add Royalty Payable to General Motors	2,708,000
Total	\$13,082,000
Less Capital Exemption	2,250,000
(22 $\frac{1}{2}$ % of \$10,000,000)	
Total Earnings Subject to Royalty	\$10,832,000
Royalty Payable (25% of Earnings Subject to Royalty)	\$ 2,708,000

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Since the pro-ration of profits is based upon total net profits after all charges, there is involved no problem of pro-rating expenses and the accounting on this basis can be relatively simple. This seems a reasonable approach, as there would be no competitive basis for billing product from the manufacturing to the selling department, which is the method of allocation provided in the royalty agreement. Assuming that the du Pont Company's return under the old arrangement approximated the present proposed manufacturing profits, General Motors position with respect to the royalty is basically unaffected. So far as additional volume over 53,000,000 pounds a year is concerned, the du Pont Company is to receive 30% of the manufacturing profits. The elimination of the balance of the manufacturing profits on this excess volume from the royalty reduces the General Motors combined return from earnings and royalty by only \$27,500 per \$1,000,000 of total manufacturing and selling profits ascribable to such additional volume. In other words, even though manufacturing profits were limited to the payments made to the du Pont Company on volume in excess of 53,000,000 pounds a year, the royalty would be increased only \$27,500 for each \$1,000,000 of profits on such excess volume. Throughout the negotia-

tions, it has been assumed that the manufacturing profits were one-third the total profits, whatever the level of volume.

Indicated Capital Expenditure

It is anticipated that the immediate capital outlay required to take over the manufacturing activities at Baton Rouge, representing plant facilities

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to be completed within the next twelve months, will be as follows:

		<u>Estimated Capital Required</u>	
		Total	Du Pont Capital Investment
Lead plant #5 and associated buildings completed in September 1937.		\$ 3,550,000	\$ 500,000
Lead plant #6, in process of construction and estimated to be completed not later than March 1, 1938.		1,850,000	185,000
Ethyl chloride plant. Plans and specifications have been prepared and construction has begun. It is expected same will be completed sometime in April, 1938.		1,750,000	175,000
Sodium plant. If orders were given immediately to build this plant, it is estimated that it could be completed by December, 1938.		2,350,000	235,000
Total		\$ 9,500,000	\$1,095,000

Working Capital Requirements

Deepwater Operations	\$ 2,750,000	\$ 916,000
Baton Rouge Operations	1,250,000	125,000
Total	\$ 4,000,000	\$1,041,000
Total Additional Capital Required	\$13,500,000	\$2,136,000

This total of \$13,500,000 will be financed, as stated previously, through the issuance of 7% bonds, to be subscribed as follows:

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Subscriptions to Bonds

Subscriber	Amount	% of Total
General Motors*	\$ 5,682,000	42.1%
Standard Oil	5,682,000	42.1
Du Pont	2,136,000	15.8
Total	\$13,500,000	100.0%

* General Motors—Assumes contribution required by 50% stock interest in the Ethyl Company.

Of the \$5,682,000 advances required by General Motors, a total of \$700,000 has already been advanced, approximately \$3,400,000 will have to be paid on or before January 1, 1938, and about one-half of the balance in the first quarter of 1938.

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This capital outlay will provide for an aggregate annual capacity of 75,000,000 pounds. It is probable that an additional lead plant will be built at Baton Rouge before the end of 1938 to provide an additional 12,000,000 pounds productive capacity, at an additional cost of \$1,750,000. Further plant outlay (not including capital expenditures to cover the manufacture of new anti-knock compounds which cannot be forecast at this time) is estimated at around \$400,000 per million pounds of output added. Assuming an annual increase of as much as 15% in volume (which does not appear to be too unreasonable), there would be a possible capital outlay of from \$3,200,000 to \$5,200,000 a year after 1938, or say \$20,000,000 for the five year period through 1943. Under the agreement, this would be financed as follows:

	Funds Required	
	Amount	% of Total
General Motors*	\$ 9,000,000	45%
Standard Oil	9,000,000	45%
Du Pont	2,000,000	10%
Total	\$20,000,000	100%

* General Motors—Assumes contribution required by 50% stock interest in the Ethyl Company.

These estimates are, of course, exclusive of any additional capital required for the selling end of the business. With the possibility of an increase in volume over the next few years, it may be necessary to double the present selling capital of \$ 5,000,000. This additional investment of \$5,000,000 will have to be advanced by the present stockholders. Assuming that the 1937 profit level of \$22,000,000 gross earnings a year (including manufacturing profits but before deduction of royalties, bonus and taxes) can be maintained, and if the tetraethyl lead sales were increased by 10%, General Motors proportion of annual net earnings in 1938 would be \$6,100,000, and royalty \$2,700,000, or a total of \$8,800,000, with a total maximum investment required of \$9,000,000.

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Recommendation

It is requested that the Policy Committee approve, in principle, the proposed operating arrangement which the Ethyl Company contemplates making with the du Pont Company, with particular reference to the allocation of profits to manufacturing activities proposed therein and the amount of capital outlay which the Ethyl Company may have to undertake thereby, and which must, in part, be underwritten by General Motors Corporation. It is further requested that the Policy Committee authorize the proper financial officers of General Motors Corporation to make the necessary subscriptions to the bonds and capital stock of the Ethyl Company in order to put this program into effect.

Respectfully submitted,

Alfred P. Sloan, Jr.,
Chairman.

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LEASE

AGREEMENT OF LEASE, made as of the 1st day of January, 1938, between E. I. DU PONT DE NEMOURS & COMPANY, a corporation of the State of Delaware, party of the first part (hereinafter referred to as LESSOR), and ETHYL GASOLINE CORPORATION, a corporation of the State of Delaware, party of the second part (hereinafter referred to as LESSEE).

WITNESSETH:

I. LESSOR does hereby let and rent to LESSEE and LESSEE hereby hires from LESSOR for the period of seven (7) years commencing on the 1st day of January 1938 and ending on the 31st day of December 1944, which term of lease, however, shall not in any event extend beyond the period of the Manufacturing Service Agreement dated as of January 1, 1938 between the parties and shall be subject to the provisions and conditions thereof, at a rental of \$100 per annum, all those buildings and improvements, including machinery and equipment of every kind and description therein, now known as the Tetraethyl Lead, Blending and Ethyl-Chloride Plant, said plants being herein-after collectively referred to as the "Deepwater Plants" situated at Deepwater Point, Salem County, New Jersey, as shown on the shaded portions of the Map annexed hereto and made a part hereof, marked Exhibit "A", together with the use, in common with LESSOR, of adjoining lands and service facilities, all to the extent necessary for the purposes of the said Manufacturing Service Agreement.

The parties hereto for themselves, their successors and assigns, hereby covenant and agree as follows:

II. LESSEE agrees to pay the rental annually in advance on the 1st day of January during the term of this Lease.

III. LESSEE agrees to use and occupy the demised premises for the object and purpose only set forth in said Manufacturing Service

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Agreement, and subject always to the rules and regulations applicable to said demised premises as established by LESSOR from time to time for LESSOR's chemical plants located at Deepwater Point, New Jersey.

IV. A. In the event any part of said "Deepwater Plants", including machinery and equipment, becomes obsolete, LESSOR may, with the approval of LESSEE, remove same from the demised premises, and make such replacements as may be necessary, at the expense of LESSEE.

The expense involved in such replacements shall be determined in accordance with LESSOR's methods of accounting with respect thereto existing at the date of this agreement with such additions and modifications thereof to meet changes in conditions as may, from time to time, be fixed by mutual agreement. Any part of said "Deepwater Plants", including machinery and equipment, shall be deemed obsolete if said part is replaced because of changes in economic conditions, design or process, or because of other progress in the art. Replacements made in said "Deepwater Plants" at expense of LESSEE under the conditions aforesaid, shall not be included in the gross book value of said "Deepwater Plants" as carried on the books of LESSOR, or included in the cost of operating or maintaining the "Deepwater Plants" under the provisions of Articles II and III of said Manufacturing Service Agreement. All other replacements, (except replacements made under the provisions of Paragraph VI hereof) whether

occasioned by wear and tear or not, shall be made at the expense of LESSOR and shall be charged to cost of operating and maintaining said "Deepwater Plants", in accordance with said Manufacturing Service Agreement. No changes shall be made in said "Deepwater Plants" without the approval of LESSOR.

B. LESSEE hereby grants to LESSOR the right and option, upon termination of this Lease for any reason whatsoever, to purchase at

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the cost thereof to LESSEE (less depreciation at three per cent (3%) per annum on buildings and then ten per cent (10%) per annum on machinery, equipment and other facilities) all or any part of the structures, machinery, enlargements, alterations, improvements, betterments and replacements not charged to cost of operation and maintenance of said "Deepwater Plants" and installed at the expense of LESSEE, and if LESSOR shall not purchase the same upon written notice within six (6) months after the termination of this Lease, then, in such event, LESSEE shall have the right, within six (6) months thereafter, to remove all such items as LESSOR shall not have purchased. Said six (6) months period shall be extended for any cause beyond the control of LESSEE which shall prevent or delay the removal of such items. It is understood and agreed by the parties hereto that the aggregate deduction for depreciation on all items purchased by LESSOR hereunder shall not exceed fifty per cent (50%) of the aggregate cost to LESSEE of all such items. All items installed at said "Deepwater Plants" which LESSEE shall have the right to remove shall become the property of LESSOR if not removed by LESSEE within the period

specified in this paragraph. All changes in said "Deepwater Plants", including machinery and equipment, charged to cost of operating and maintaining said "Deepwater Plants" shall be deemed property of LESSOR.

V. During the term of this Lease, LESSOR agrees to keep said "Deepwater Plants" insured for the full insurable value thereof against loss or damage by fire and/or explosion, and/or other insurable risks. Such policies of insurance shall be taken out in companies satisfactory to both parties, and shall insure LESSOR and LESSEE as their respective interests may appear, provided, however, LESSOR shall have the right, at its option, to carry all or any part of such insurance in its own Insurance Reserve. All premiums on the policies so taken out shall be paid by LESSEE to LESSOR as they become due. In determining the amount to be set aside in LESSOR's

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own Insurance Reserve, LESSOR will follow the principles heretofore used by it and the charge to LESSEE for any insurance carried by LESSOR in its insurance reserve shall not exceed premiums which would be payable on comparable policies with an insurance company.

VI. In the event of the destruction of any building, structure, equipment or machinery hereby leased, by fire or other insured cause, or in the event any of such property is damaged by any such reason, the LESSOR shall, at its own expense, repair or replace any of such property owned by LESSOR as speedily as practicable, and shall repair or replace at expense of LESSEE any of such property owned by LESSEE. Said "expense of LESSEE" shall be determined in accordance

with the methods of accounting referred to in Paragraph IV A hereof.

VII. LESSEE agrees to reimburse LESSOR for all taxes of whatever kind or nature (excepting income taxes) charged against or in connection with said "Deepwater Plants" and contents thereof (including machinery and equipment) and the operation of said plants.

VIII. If default shall be made by LESSEE in any of the provisions in this lease contained or in any provision pertaining to said "Deepwater Plants" of said Manufacturing Service Agreement, then upon the happening of such event and after thirty (30) days' notice given by LESSOR to LESSEE, specifying such default, and if such default has not been made good at the expiration of said thirty (30) days, then at the election of LESSOR given by notice in writing to LESSEE, this Lease shall terminate and it shall be lawful for LESSOR to re-enter said "Deepwater Plants" and repossess the same by summary proceedings or otherwise; provided that should such default be of a provision herein other than one requiring the payment of money by LESSEE, the LESSEE may relieve itself of the effect of such notice of default by promptly on receipt thereof

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proceeding actually and in good faith with the performance of the requirement then in default under this Lease, and completing the same with all reasonable speed.

IX. Except as herein provided, LESSEE agrees to surrender and deliver to the LESSOR at the end of the term

hereof, said "Deepwater Plants" in good condition and repair, ordinary wear and tear excepted.

X: All notices required or permitted to be given under the provisions of this Lease shall be in writing and may be delivered by either party to the other, and will be deemed to have been sufficiently given if sent by registered mail directed to the Corporation to receive the same at its principle office, and such notice shall be deemed served on the date of such delivery in person or of such mailing.

XI. LESSEE, upon due performance of the covenants and agreements contained herein and in said Manufacturing Service Agreement in so far as they may be applicable to said "Deepwater Plants", shall and may at all times during the term hereby granted, peaceably and quietly have, hold and enjoy said "Deepwater Plants" without any manner of let, suit, trouble or hindrance of and from the LESSOR or any person or persons whomsoever.

XII. It is understood and agreed that in the event said "Deepwater Plants" are not operated for the manufacture of anti-knock compounds during any two successive years of the term of this Lease, then LESSOR may terminate this Lease on not less than thirty (30) days' written notice given to the other party.

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IN WITNESS WHEREOF, the parties hereto have caused these presents to be signed, and their respective seals to be hereto affixed, in duplicate, by their officers or representa-

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tives thereunto duly authorized, this *sixth* day of January,
1938.

(SEAL)

E. I. DU PONT DE NEMOURS & COMPANY
By *E. G. Robinson*.
General Manager

ATTEST:

W. F. Raskob
Secretary

(SEAL)

ETHYL GASOLINE CORPORATION
By *E. W. Webb*
President

ATTEST:

J. C. Gonzales
Secretary

NOTE: At lower right of all pages is written "GMC-847a"; at the bottom of first page is written "Lease"; across the top of the first page is written "Four agreements in this binder as follows:—Lease, Manufacturing Service, XX Financing, License"; at the right of this notation an asterisk is placed by hand; at lower right of last page is written "Exhibit A, part I"; in left margin of sixth page is stamped "Form approved, Legal Department . . . Ass't. Director"; in the space provided in this stamp is written the name of H. C. Haskell; beneath this stamp are written two sets of illegible initials; italics indicate handwriting.

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SKETCH NO. D.W.S 2061

E. I. DU PONT DE NEMOURS & CO., INC.

DYE WORKS

Mechanicsburg Pa.

DATE 12-19-1937

DRAWN BY W. H. SCHAUER

REVIEWED BY

REFER TO DRAWING MAP 2454 N° 12

FOR 1000 ft.

SODIUM STORAGE TANKS N° 784

MAP
Scale 1:50

4000ft

500N

500ft

BULK SODIUM
CAR NO
FL 11-6
SODIUM

SOIL 33N

BULK SODIUM TANKS
FL 11-6

DYE WORKS
E. I. DU PONT

500N



4838

MANUFACTURING SERVICE AGREEMENT, made as of the 1st day of January, 1938, between ETHYL GASOLINE CORPORATION, a corporation of the State of Delaware, hereinafter called ETHYL COMPANY, and E. I. DU PONT DE NEMOURS & COMPANY, a corporation of the State of Delaware, hereinafter called DU PONT COMPANY,

WITNESSETH THAT

WHEREAS, DU PONT COMPANY has been engaged for many years in the manufacture of sodium, lead-sodium alloy, ethyl chloride and tetraethyl lead and the blending of the latter with other ingredients to form anti-knock compounds; and

WHEREAS, ETHYL COMPANY desires to avail itself of the experience, knowledge and ability of DU PONT COMPANY in the operation of plants for the manufacture of sodium, lead-sodium alloy, ethyl chloride and tetraethyl lead and the blending of said anti-knock compounds.

Now, THEREFORE, in consideration of the premises and the mutual covenants and agreements herein expressed, it is agreed as follows:

ARTICLE I

EMPLOYMENT OF DU PONT COMPANY

Subject to the terms and conditions in this agreement stated, ETHYL COMPANY hereby employs DU PONT COMPANY to operate the lead-sodium alloy, ethyl chloride, tetraethyl lead and blending plants for the production only of anti-knock compounds, said plants hereinafter collectively called "Deepwater Plants", which ETHYL COMPANY has leased at Deepwater Point, Salem County, New Jersey, and DU PONT

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COMPANY hereby accepts such employment for and during the period set forth in lease of said plants executed by the parties hereto dated January 1, 1938.

Wherever the term "anti-knock compounds" is used in this agreement, it shall have the meaning as defined in the License Agreement executed by the parties hereto dated January 1, 1938.

ARTICLE II

COST OF ETHYL CHLORIDE AND TETRAETHYL LEAD AND BLENDING OF LATTER WITH OTHER INGREDIENTS: OTHER ANTI-KNOCK COMPOUNDS

Subject to the provisions of the said lease, ETHYL COMPANY agrees to pay to DU PONT COMPANY the full cost to DU PONT COMPANY of operating and maintaining said "Deepwater Plants" and storing and handling of any products therein, in accordance with Articles I and X hereof, said cost to include all items chargeable thereto as determined in accordance with DU PONT COMPANY's methods of accounting with respect thereto existing at the date of this agreement with such additions and modifications thereof as may be fixed by mutual agreement to provide for changes in conditions, all, however, subject to the following provisions of Article III hereof.

ARTICLE III

METHOD OF DETERMINING CERTAIN ITEMS OF COST SET FORTH IN ARTICLE II HEREOF

Without limiting the generality of Article II hereof, in operating said "Deepwater Plants" and determining

the costs referred to in said Article II, the following items shall be treated in the manner set forth in this Article III.

A. Ethyl Alcohol: Du PONT COMPANY agrees to supply to ETHYL COMPANY and ETHYL COMPANY agrees to purchase from Du PONT COMPANY, during the term of this agreement, all ethyl alcohol required for use

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in said "Deepwater Plants" at the current market price for ethyl alcohol of substantially similar quality and quantity under approximately similar conditions of sale.

B. Sulphuric Acid and Caustic Soda: Du PONT COMPANY agrees to supply to ETHYL COMPANY and ETHYL COMPANY agrees to purchase from Du PONT COMPANY, during the term of this agreement, all sulphuric acid and caustic soda required for use in said "Deepwater Plants" at the current market price for such materials of substantially similar quality and quantity under approximately similar conditions of sale.

C. Sodium: Du PONT COMPANY agrees to supply from its Niagara Falls, New York plant, to ETHYL COMPANY, and ETHYL COMPANY agrees to purchase from Du PONT COMPANY, during the term of this agreement, all sodium required for use in said "Deepwater Plants". The price per pound of such sodium, f.o.b. Du PONT COMPANY's sodium factory, Niagara Falls, New York, shall be Du PONT COMPANY's cost per pound of sodium as determined by the methods of accounting specified in Article II aforesaid, including a credit of one-half ($\frac{1}{2}$) cent per pound of chlorine produced in connection with the manufacture of such sodium, plus a return of seven per cent (7%) per

year on that part of DU PONT COMPANY's investment in sodium manufacture represented by such sodium. Said cost per pound shall be determined for DU PONT COMPANY's sodium production at Niagara Falls, New York, as a whole, and said investment in sodium manufacture shall include the buildings and equipment directly employed by DU PONT COMPANY in the manufacture of sodium, a pro rata share of the investment in any facilities or auxiliary operations required as an adjunct to the manufacture of sodium, and a pro rata share of working capital required for the manufacture of sodium. The value of buildings and equipment for purposes of computing said investment shall be deemed

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to be the same per unit of sodium production capacity as that of the sodium plant specified in Article VI, adjusted for any reduction in investment resulting from increasing capacity to capacity of DU PONT COMPANY's sodium factory at Niagara Falls, New York, provided that until such plant shall be erected, investment shall be the replacement value as of the date of this agreement, adjusted in accordance with actual capitalization for items subsequently installed.

D. Ethyl Chloride: It is understood and agreed that the entire requirements of ethyl chloride for said "Deepwater Plants" will be produced at the said leased ethyl chloride plant up to the capacity thereof, and in the event the production of ethyl chloride in the said leased ethyl chloride plant shall be insufficient for the production of anti-knock compounds at said "Deepwater Plants" of ETHYL COMPANY, then DU PONT COMPANY agrees to supply to ETHYL COMPANY and ETHYL COMPANY agrees to purchase from DU PONT COMPANY, during the term of this agreement, such excess requirements of ETHYL COMPANY, but

not more than two million (2,000,000) pounds per month, for use only in making anti-knock compounds in said "Deepwater Plants" at a delivered price which shall not exceed the cost to ETHYL COMPANY of ethyl chloride from its said leased Deepwater ethyl chloride plant.

E. Depreciation: The said costs shall include depreciation on the buildings, machinery and facilities constituting the plants leased by ETHYL COMPANY from DU PONT COMPANY at Deepwater Point, New Jersey, as above referred to, at the rates per annum of three per cent (3%) on buildings, and ten per cent (10%) on machinery and equipment and other facilities, on the basis of the gross value thereof as carried on the books of DU PONT COMPANY before deducting depreciation. No depreciation, however, shall be charged on facilities for blending and storage of "Ethyl" and "Q" fluids.

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F. Research Expenses: The cost of such research, development and investigation as DU PONT COMPANY may do at the request of and for the account of ETHYL COMPANY shall be charged at the cost thereof, plus twenty per cent (20%). Nothing in this agreement shall obligate DU PONT COMPANY to carry on any such work for ETHYL COMPANY's account, but it shall be considered that all inventions or discoveries of DU PONT COMPANY made during the term of this agreement and relating to lead alkyls in the field of this agreement have been made for the account of ETHYL COMPANY but unless such work was requested by ETHYL COMPANY, ETHYL COMPANY shall be liable only for the direct cost of such portion of such work as shall have resulted in the invention or discovery. The results of any such work insofar as they are within the field of this agree-

ment shall be the property of ETHYL COMPANY, and any resulting patent rights shall be assigned to ETHYL COMPANY. All other inventions and discoveries of DU PONT COMPANY in the field of this agreement shall belong to DU PONT COMPANY.

G. Insurance Reserves: In case any of the hazards pertaining to the plants leased to ETHYL COMPANY, as aforesaid, at Deepwater Point or the operation or maintenance thereof are insured at the option of DU PONT COMPANY, in its own insurance reserves, the expense of such insurance shall be included in the said cost at the full amount set aside by DU PONT COMPANY in its reserves for such purposes. In determining the amount to be set aside for such purposes, DU PONT COMPANY will follow the principles heretofore used by it, but the charge to ETHYL COMPANY for any insurance carried by DU PONT COMPANY in its insurance reserves shall not exceed premiums which would be payable on comparable policies with an insurance company.

H. Overhead: The said cost shall include such charges for Wilmington and works overhead and other indirect expense of DU PONT COMPANY wherever incurred, as shall be applicable to the said plants of ETHYL COMPANY or the operation or maintenance thereof, including the storing and handling of any products therein.

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I. Service Facilities: DU PONT COMPANY agrees to supply the use and output of its service facilities at its chemical plants at Deepwater Point, New Jersey, to the extent required for the operation and maintenance of the said adjacent plants of ETHYL COMPANY, and ETHYL COMPANY agrees to employ such facilities and purchase such output

thereof, to the extent necessary, including electricity, water, steam and all other facilities at the said adjacent Deepwater plants of DU PONT COMPANY. The cost of each item of service and product to be so furnished by DU PONT COMPANY under this Paragraph I, shall include, in addition to all other items chargeable thereto in accordance with the methods of accounting specified in Article II aforesaid, interest at the rate of seven per cent (7%) per annum on the proportion of the investment of DU PONT COMPANY in the facilities serving ETHYL COMPANY on the basis of the gross value thereof as carried on the books of DU PONT COMPANY before deducting depreciation. The calculation of the proportion of investment and fixed expense in facilities and organization for serving, operating and maintaining ETHYL COMPANY's said plants shall be based upon the assumption of approximately normal rate of operation of DU PONT COMPANY's adjacent chemical plants at Deepwater Point, New Jersey.

J. "Idle" and "Stand-by" Expense: In operating and maintaining ETHYL COMPANY's said "Deepwater Plants", as aforesaid, DU PONT COMPANY may maintain an organization and facilities not only in connection with the said plants of ETHYL COMPANY but also in connection with the adjacent chemical plants of DU PONT COMPANY for the purpose of operating and maintaining the said plants of ETHYL COMPANY in accordance with this agreement, and, in case the operation of the said plants of ETHYL COMPANY in any accounting month falls below four million four hundred thousand (4,400,000) pounds of tetraethyl lead or other anti-knock compounds, there shall be charged to ETHYL COMPANY, in addition to all charges aforesaid a "Stand-by" or "Idle" expense charge sufficient to

reimburse DU PONT COMPANY for that part of the cost of providing the said facilities and organization for serving or maintaining ETHYL COMPANY's said plants, which part is not otherwise charged to ETHYL COMPANY.

K. In the event ETHYL COMPANY notifies DU PONT COMPANY in writing that ETHYL COMPANY has no further need for any such use and output of the service facilities of DU PONT COMPANY as specified in Paragraphs I and J aforesaid, then DU PONT COMPANY will exercise its best efforts to utilize such facilities in its manufacturing operations at Deepwater Point, New Jersey. Any portion of such facilities utilized by DU PONT COMPANY will not be charged to ETHYL COMPANY.

L. Payment of Maintenance and Operating Cost: DU PONT COMPANY agrees to prepare and submit to ETHYL COMPANY, on or before the 15th day of each month during the term of this agreement, an itemized statement showing the amount to be paid by ETHYL COMPANY to DU PONT COMPANY in accordance with Articles II and III of this agreement for the preceding calendar month, specifying the items included therein. Within ten (10) days after receipt of such statement, ETHYL COMPANY agrees to pay to DU PONT COMPANY the amount shown thereby as being due. DU PONT COMPANY agrees to keep complete and accurate books and records showing the cost of each such item and to give unconditional access thereto to ETHYL COMPANY's authorized representatives during business hours.

M. Working Capital: ETHYL COMPANY agrees to keep on deposit, without interest, with DU PONT COMPANY, during the period of operation of said plants of ETHYL

COMPANY, sufficient sums of money to cover DU PONT COMPANY's working capital, including current purchases and work in progress. DU PONT COMPANY agrees, upon the termination of this agreement, to account for and to repay to ETHYL COMPANY any balance of such sums advanced by ETHYL COMPANY.

ETHYL COMPANY further agrees to purchase at DU PONT COMPANY's book value, from DU PONT COMPANY, all materials, supplies and products

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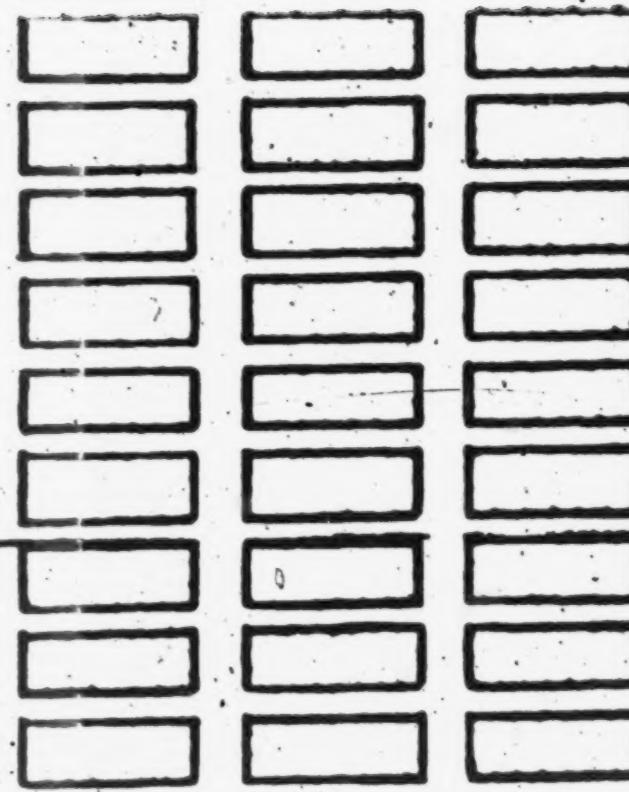
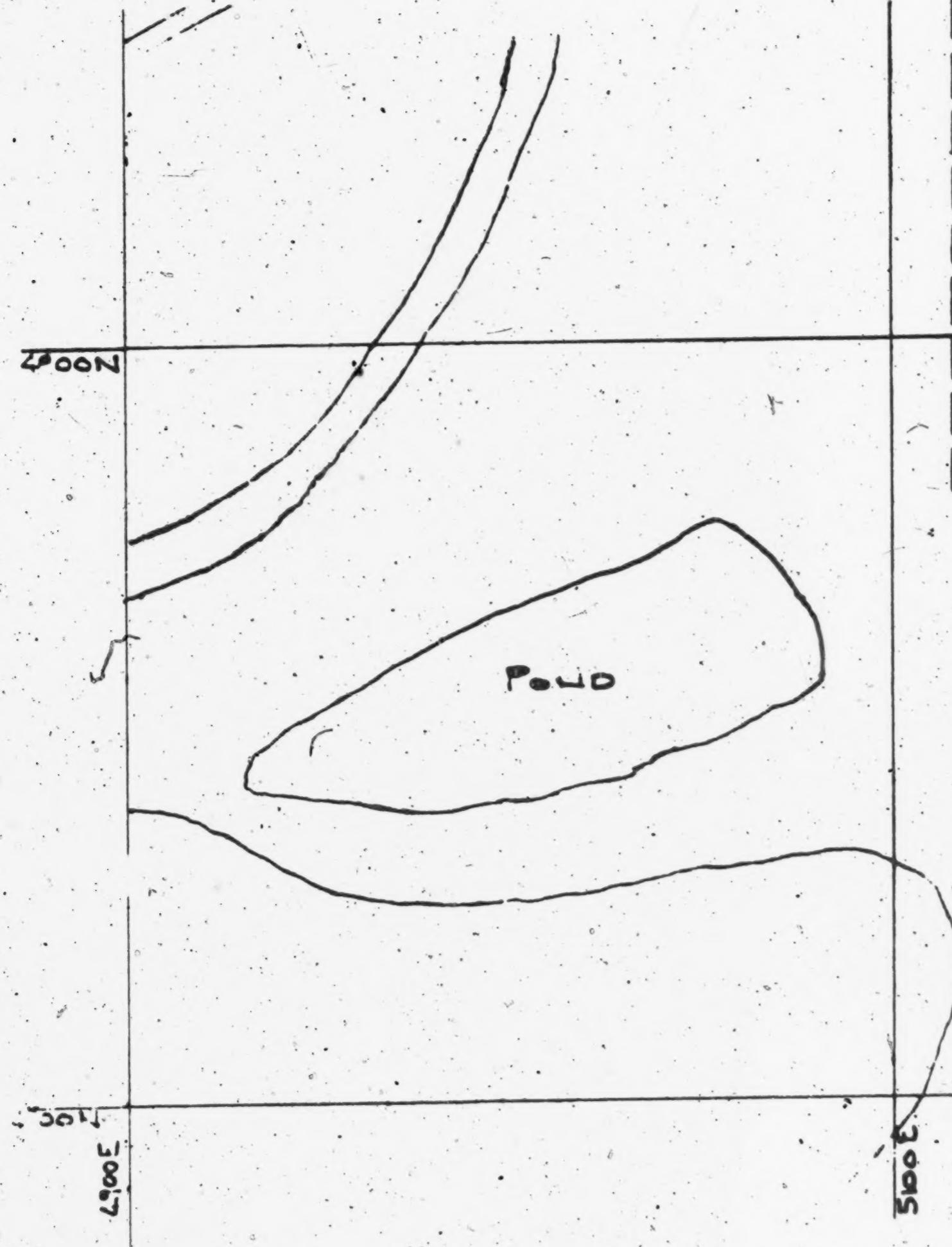
held by DU PONT COMPANY at Deepwater Point, at the date of this agreement, in connection with the manufacture of lead sodium alloy, ethyl chloride and anti-knock compounds for ETHYL COMPANY. ETHYL COMPANY also agrees to assume all contract commitments of DU PONT COMPANY as of the date of this agreement pertaining to materials and supplies for the operation or maintenance of said "Deepwater Plants".

ARTICLE IV

MISCELLANEOUS RAW MATERIALS AND SUPPLIES

ETHYL COMPANY agrees to deliver to DU PONT COMPANY, free of charge, at said "Deepwater Plants" raw materials which are required in their operations and which are not specified in Article III aforesaid. DU PONT COMPANY agrees to deliver to ETHYL COMPANY on or before the first day of January, April, July and October of each year, during the term of this agreement, an estimate of the kinds and quantity of raw materials and supplies, except repair parts and storeroom supplies, required in the operation of said "Deepwater Plants" during the next suc-

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BULK JERMY TANKS
30. III. 1958.

2558

Note:-
This Traced From Map 2454
Sheet 12

5205

DYE WORKS

CARNEYS POINT

WORKS

ceeding quarterly period. DU PONT COMPANY further agrees to purchase, at the request of ETHYL COMPANY, available raw materials and supplies, or any of them, for the account of ETHYL COMPANY. DU PONT COMPANY's expense in connection with the purchase, storing, and handling of such materials and supplies shall be charged to ETHYL COMPANY as part of the costs specified in Articles II and III hereof.

ARTICLE V

BATON ROUGE LEAD PLANTS

A. DU PONT COMPANY hereby agrees to sell and ETHYL COMPANY hereby agrees to purchase, free and clear of all liens and encumbrances arising out of construction of said plant, all DU PONT COMPANY's right, title and interest in and to the "No. 5" lead plant, blending plant, and all accessory buildings constructed or now in process of construction at Baton Rouge, Louisiana, (hereinafter collectively referred to as "No. 5 Lead Plant"), upon the date of completion thereof or the date of this agreement, whichever is later.

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The purchase price of No. 5 Lead Plant shall be the cost incurred by DU PONT COMPANY in connection with the construction thereof, plus interest at two and one-quarter per cent ($2\frac{1}{4}\%$) per annum on DU PONT COMPANY's investment in constructing said plant. DU PONT COMPANY agrees to submit promptly to ETHYL COMPANY an itemized statement showing all costs incurred by DU PONT COMPANY in the construction of said No. 5 Lead Plant. Within thirty (30) days after the receipt of such statement, ETHYL COMPANY agrees to pay said purchase price in full.

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to DU PONT COMPANY. DU PONT COMPANY agrees to complete No. 5 Lead Plant as soon as practicable.

B. DU PONT COMPANY agrees to continue the construction of the second tetraethyl lead plant, referred to in the certain agreement between the parties dated March 2, 1937 (hereinafter called No. 6 Lead Plant), at Baton Rouge, Louisiana. Upon completion, DU PONT COMPANY agrees to sell and ETHYL COMPANY agrees to purchase, free and clear of all liens and encumbrances arising out of construction of said plant, all DU PONT COMPANY's right, title and interest in and to the said No. 6 Lead Plant, and all facilities accessory thereto.

The purchase price of No. 6 Lead Plant shall be the cost incurred by DU PONT COMPANY in connection with the construction thereof. DU PONT COMPANY agrees to submit promptly to ETHYL COMPANY an itemized statement showing all costs incurred by DU PONT COMPANY in the construction of said No. 6 Lead Plant. Except as hereinafter provided, ETHYL COMPANY agrees to pay said purchase price in full to DU PONT COMPANY within thirty (30) days after receipt of such statement. DU PONT COMPANY agrees to complete No. 6 Lead Plant as soon as practicable.

The entire cost to DU PONT COMPANY of the construction of said No. 6 Lead Plant shall be advanced by ETHYL COMPANY to DU PONT COMPANY in the form of loan or loans in accordance with the monthly request made in advance by DU PONT COMPANY. Such requests, shall be

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based on DU PONT COMPANY's estimate of the expenses which will probably be incurred by it during the ensuing calendar month. Upon receipt of such advance, DU PONT COMPANY shall execute the proper evidence of its indebtedness to ETHYL COMPANY in the form of non-ne-

gotiable notes which shall fall due and shall be payable, without interest, on date of completion agreed upon by ETHYL COMPANY and DU PONT COMPANY; provided, however, DU PONT COMPANY shall have the right to an extension of said date of payment in the event the construction work shall not have been finally completed on said specified date of completion. In the computation of the amount of purchase money which ETHYL COMPANY shall pay to DU PONT COMPANY for said No. 6 Lead Plant, all advances of money made thereon by ETHYL COMPANY hereunder or under said agreement of March 2, 1937, shall operate as a credit in favor of ETHYL COMPANY against the total cost of said No. 6 Lead Plant. Upon completion of such construction work, ETHYL COMPANY agrees to mark all said non-negotiable notes, executed by DU PONT COMPANY to evidence such loans, as being fully paid and satisfied, and to return said notes so marked to DU PONT COMPANY, and ETHYL COMPANY further agrees to give such proper instruments of release as may be required by DU PONT COMPANY. In the event the said advances shall exceed the said purchase price of such plant, DU PONT COMPANY shall promptly repay such excess to ETHYL COMPANY.

C. Upon written request made by DU PONT COMPANY, ETHYL COMPANY hereby agrees and consents to accept full assignment and conveyance of and to assume all obligations and liability under any and all contracts, agreements, deeds, leases, easements, licenses and obligatory writings of every kind or nature whatsoever then unexpired and in force and effect, which DU PONT COMPANY may have entered into in connection with the construction, maintenance and/or operation of the said No. 5 and No. 6 Lead Plants.

D. DU PONT COMPANY further agrees to operate and maintain No. 5 Lead Plant and No. 6 Lead Plant (hereinafter called said Lead Plants),

for the production only of anti-knock compounds for the account and risk of ETHYL COMPANY, during the period in which DU PONT COMPANY shall operate said "Deepwater Plants" for the account of ETHYL COMPANY, with the understanding that ETHYL COMPANY may discontinue the services of DU PONT COMPANY under this paragraph at any time upon not less than one year's written notice given to DU PONT COMPANY, or upon not less than six (6) months' written notice in the event ETHYL COMPANY desires said Lead Plants to be operated for the production of an anti-knock compound or compounds other than tetraethyl lead, using processes or equipment unacceptable to DU PONT COMPANY.

ETHYL COMPANY agrees to pay for such operation and maintenance all expenses and costs (including a fair proportion of Wilmington Office expense and other indirect expense of DU PONT COMPANY) incurred by DU PONT COMPANY applicable to or in connection with the operation and maintenance of said Lead Plants. DU PONT COMPANY agrees to prepare and submit to ETHYL COMPANY on or before the fifteenth day of each month for the period DU PONT COMPANY operates said Lead Plants, an itemized statement showing all charges incurred by DU PONT COMPANY during the next preceding calendar month applicable to or in connection with the operation and maintenance of said Lead Plants. Within ten (10) days after the receipt of such statement, ETHYL COMPANY agrees to pay the same in full to DU PONT COMPANY. ETHYL COMPANY agrees to keep on deposit, without interest, with DU PONT COMPANY, during the period of DU PONT COMPANY's operation and maintenance of said Lead Plants, sufficient sums of money to cover DU PONT COMPANY's working capital.

including current purchases and work in progress in connection therewith. DU PONT COMPANY agrees to account for and to repay to ETHYL COMPANY any balance of such sums so advanced by ETHYL COMPANY upon termination of this agreement or upon the discontinuance of the services of DU PONT COMPANY under this Paragraph D, whichever is earlier.

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ETHYL COMPANY further agrees to purchase at DU PONT COMPANY's book value, from DU PONT COMPANY, all materials, supplies and products held by DU PONT COMPANY, at the date of this agreement, in connection with the manufacture of ethyl chloride, lead sodium alloy and anti-knock compounds for ETHYL COMPANY at said Lead Plants. ETHYL COMPANY also agrees to assume all contract commitments of DU PONT COMPANY, as of the time of purchase of said Lead Plants, pertaining to materials and supplies for the operation and maintenance of said Lead Plants.

E. DU PONT COMPANY agrees to supply to ETHYL COMPANY and ETHYL COMPANY agrees to purchase from DU PONT COMPANY all ethyl chloride required for use in the operation of No. 5 Lead Plant at Baton Rouge, Louisiana, for the period beginning January 1, 1938, and ending September 30, 1939. The purchase price thereof shall be seven and one-half ($7\frac{1}{2}$) cents per pound, f.o.b. Deepwater Point, New Jersey, and shall be paid by ETHYL COMPANY by the 25th of the month following shipment of said ethyl chloride. Said ethyl chloride may be furnished by DU PONT COMPANY from either Deepwater Point, New Jersey, or Niagara Falls, New York, but if furnished from

Niagara Falls, New York, DU PONT COMPANY shall pay to ETHYL COMPANY the difference between freight charges on said ethyl chloride from Niagara Falls, New York, to Baton Rouge, Louisiana, and freight charges on said ethyl chloride from Deepwater Point, New Jersey to Baton Rouge, Louisiana.

F. Until such time as ETHYL COMPANY shall have erected the sodium plant specified in Article VI hereof, Du PONT COMPANY agrees to supply to ETHYL COMPANY and ETHYL COMPANY agrees to purchase from DU PONT COMPANY all sodium required for use in said Lead Plants at Baton Rouge, Louisiana, provided that DU PONT COMPANY shall be able to supply said sodium from its available unused production capacity. The purchase price of said sodium shall be the same as that provided for in Paragraph C of Article III aforesaid, and shall be paid by ETHYL COMPANY by the 25th of the month following shipments of the sodium. In case DU PONT COMPANY is unable to supply said sodium for

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lack of available capacity, then DU PONT COMPANY at the written request of ETHYL COMPANY and upon reasonable notice, but not subsequent to December 31, 1939, will increase its sodium manufacturing capacity in order to supply to ETHYL COMPANY sodium for use in said Lead Plants, provided that ETHYL COMPANY will guarantee a return on the required additional capital investment of twenty per cent (20%) per year over a period of six (6) years.

ARTICLE VI

BATON ROUGE SODIUM PLANT

A. At the written request of ETHYL COMPANY, DU PONT COMPANY agrees at any time within the period in

which DU PONT COMPANY shall operate said "Deepwater Plants" for ETHYL COMPANY, to prepare, at the expense of ETHYL COMPANY, designs, plans and specifications for the construction of a sodium plant (hereinafter called "said sodium plant") at Baton Rouge, Louisiana, which will have a peak production capacity at a rate equivalent to twelve million five hundred thousand (12,500,000) pounds of sodium per year, and will operate regularly and satisfactorily under competent supervision, and will have a normal capacity to produce up to ten million (10,000,000) pounds of sodium per year. The quality of such sodium shall be equal to that now delivered by The R. & H. Chemicals Department of DU PONT COMPANY to the tetraethyl lead plants at Deepwater Point, New Jersey. Upon the completion by DU PONT COMPANY of said designs, plans and specifications, DU PONT COMPANY shall advise ETHYL COMPANY of the estimated cost of construction of said sodium plant which estimate shall not be binding upon DU PONT COMPANY. In the event ETHYL COMPANY shall advise DU PONT COMPANY that it elects to have DU PONT COMPANY construct said sodium plant according to Section B of this Article VI, DU PONT COMPANY shall deliver to ETHYL COMPANY the said designs, plans and specifications for said sodium plant upon the written request of the President of ETHYL COMPANY.

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B. At the written request of ETHYL COMPANY, DU PONT COMPANY agrees, for the account and risk of ETHYL COMPANY, to erect as soon as practicable and operate said sodium plant, during the period of said lease for the "Deepwater Plants", and DU PONT COMPANY agrees to take such steps as it may deem practicable to insure the most economical operation thereof.

ETHYL COMPANY shall advance to DU PONT COMPANY, from time to time, necessary funds without interest for

the construction of said sodium plant and shall reimburse DU PONT COMPANY for its costs incurred in connection with the said construction, within thirty (30) days after receipt from DU PONT COMPANY of a statement thereof. Upon written request made by DU PONT COMPANY, ETHYL COMPANY hereby agrees and consents to accept full assignment and conveyance of and to assume all obligations and liability under any and all contracts, agreements, deeds, leases, easements, licenses and obligatory writings of every kind or nature whatsoever, then unexpired and in force and effect, which DU PONT COMPANY may have entered into in connection with the construction, maintenance, and/or operation of said sodium plant.

ETHYL COMPANY further agrees to pay DU PONT COMPANY for the operation and maintenance of said sodium plant all expenses and costs (including a fair proportion of Wilmington Office expense and other indirect expense of DU PONT COMPANY) incurred by DU PONT COMPANY applicable to or in connection with such operation and maintenance. DU PONT COMPANY agrees to prepare and submit to ETHYL COMPANY on or before the 15th day of each month during the period DU PONT COMPANY operates said sodium plant an itemized statement showing all expenses and costs incurred by DU PONT COMPANY during the next preceding calendar month applicable to or in connection with the operation and maintenance of said sodium plant. Within ten (10) days after the receipt of said statement, ETHYL COMPANY agrees to pay the same in full to DU PONT COMPANY. ETHYL COMPANY further agrees to keep on deposit, without interest, with DU PONT COMPANY during the period of

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DU PONT COMPANY's operation and maintenance of said sodium plant sufficient sums of money to cover DU PONT

COMPANY's working capital, including current purchases and work in progress in connection therewith. DU PONT COMPANY agrees to account for and repay ETHYL COMPANY any balance of sums so advanced by ETHYL COMPANY for working capital upon termination of this agreement or upon the discontinuance of the services of DU PONT COMPANY under this Paragraph B, whichever is earlier.

C. Du PONT COMPANY hereby guarantees that during the period of operation of said sodium plant by DU PONT COMPANY from and after three (3) months from the date of commencement of operations in said sodium plant, it will manufacture sodium of the quality aforesaid at an average factory cost, exclusive of royalty, which, upon the bases of cost hereinafter specified, shall bear the following relationship to the volume of annual productions:

Annual Production	Maximum Manufacturing Cost per Pound of Sodium
10,000,000 pounds or more	6.5¢
9,500,000 — 10,000,000 pounds	6.65¢
9,000,000 — 9,500,000 "	6.85¢
8,500,000 — 9,000,000 "	7.05¢
8,000,000 — 8,500,000 "	7.25¢

The aforesaid guaranteed costs shall be computed upon the following bases:

Crude Salt (solid or in solution)	— \$3.15 per ton delivered
Power	— \$.0035 per KWH A.C. delivered
Labor	— \$.80 per man hour average
Overhead	— 70% of wages
Depreciation on fixtures & Equipment	— 7% per year
Depreciation on buildings	— 3% per year
Chlorine credit	— \$.005 per pound of chlorine produced
Other cost elements	— \$.013 per pound of sodium

An example of the computation of said guaranteed costs is attached hereto as Exhibit B. In the event that during any year of operation of the said sodium plant by DU PONT COMPANY the production is at least eight million (8,000,000) pounds of sodium and the adjusted average cost calculated as above described is in excess of the guaranteed cost,

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DU PONT COMPANY will reimburse ETHYL COMPANY not later than the 25th day following the expiration of the first calendar quarter of the next succeeding year for the excess up to but not exceeding the amount of royalty paid to DU PONT COMPANY by ETHYL COMPANY upon such sodium for such year of operation and the liability of DU PONT COMPANY under this guarantee is expressly limited to such reimbursement.

D. In the event the said sodium plant is erected by DU PONT COMPANY for ETHYL COMPANY as above provided, then, upon written request of the President of ETHYL COMPANY, ETHYL COMPANY's authorized representatives shall have free access to said plant and DU PONT COMPANY will disclose fully to ETHYL COMPANY its process for the manufacture of sodium as now employed at Niagara Falls, New York, (hereinafter called "said sodium process") with such improvements thereon as may have been effected by DU PONT COMPANY prior to such disclosure, and each party will then make available to duly authorized representatives of the other party all scientific, technical, engineering and other information with respect to said sodium process which it has attained or may attain during the next succeeding ten (10) years from date of commencement of operations in said sodium plant. DU PONT COMPANY upon written request of the President of ETHYL COMPANY will grant to ETHYL COMPANY irrevocable, non-exclusive licenses for the United States, without right to sub-license, and for use

by ETHYL COMPANY only in plants erected under the terms of this agreement and only in connection with the manufacture of anti-knock compounds, under inventions controlled by DU PONT COMPANY during the period of ten (10) years from the date of commencement of operations in said sodium plant relating to and employed in the manufacture of sodium by said sodium process. Upon the request of DU PONT COMPANY, ETHYL COMPANY will grant to DU PONT COMPANY irrevocable licenses for the United States and foreign countries under any inventions controlled by ETHYL COMPANY within ten (10) years from date of commencement of operations in said sodium plant, relating to said sodium process, and developed or acquired by ETHYL COMPANY either (1) in connection with the operation of said

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sodium process, or (2) after ETHYL COMPANY shall have received any information or license hereunder with respect to sodium or shall have received access hereunder to any sodium plant erected under Article VI or IX hereof, and such licenses shall be exclusive (with full right to sublicense) for use in the manufacture of alkali metals to be supplied to ETHYL COMPANY and for use in the manufacture of alkali metals for use in fields outside the manufacture of anti-knock compounds, provided that ETHYL COMPANY shall retain the right to use such inventions in connection with the manufacture of alkali metals for anti-knock compounds and all rights to such inventions for use in fields other than the manufacture of alkali metals. Each party agrees not to use secret information received from the other party hereunder, except to the extent that each respectively is to be licensed as provided above. Nothing in this paragraph contained shall obligate either

party to grant licenses to the other party with respect to any inventions acquired subsequent to the date of this agreement, except under the terms and conditions imposed on the party granting such license in acquiring said inventions or rights with respect thereto. Subject to the conditions herein provided ETHYL COMPANY agrees to pay DU PONT COMPANY on all sodium manufactured by said sodium process in all plants erected under the terms of Articles VI and IX hereof, whether operated by DU PONT COMPANY hereunder or by ETHYL COMPANY or otherwise a royalty at the following rates:

2¢ per pound on first 100,000,000 pounds
 1¢ " " " succeeding 100,000,000 pounds
 ½¢ per pound on all sodium in excess of
 200,000,000 pounds.

The said royalty shall be payable by ETHYL COMPANY to DU PONT COMPANY not later than the 15th day following the expiration of each calendar quarter of the year.

E. ETHYL COMPANY may terminate the services of DU PONT COMPANY under Section B of this Article VI at any time upon one (1) years'

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notice to DU PONT COMPANY sent by registered mail. Upon termination of DU PONT COMPANY's services in operating said plant for any reason, the guarantee of DU PONT COMPANY aforesaid with respect to the cost of sodium manufactured thereafter shall be cancelled and rescinded, and ETHYL COMPANY shall continue to pay royalties at the rate provided for in this agreement.

ARTICLE VII

COMPENSATION TO DU PONT COMPANY

ETHYL COMPANY agrees to pay DU PONT COMPANY in addition to any other sums due DU PONT COMPANY hereunder, in consideration of the execution and fulfillment of this agreement by DU PONT COMPANY, a sum based upon the gross profits of ETHYL COMPANY during each calendar year of this agreement equal to the following:

1. 100% of gross manufacturing profits of ETHYL COMPANY from manufacture, purchase, and sale of tetraethyl lead and/or mixtures thereof with other substances up to an aggregate amount of 53,000,000 pounds of total tetraethyl lead content in the subject calendar year; and
2. 30% of gross manufacturing profits of ETHYL COMPANY from manufacture, purchase, and sale of tetraethyl lead and/or mixtures thereof with other substances over and above 53,000,000 pounds of total tetraethyl lead content in the subject calendar year; and
3. 60% of gross manufacturing profits of ETHYL COMPANY from manufacture, purchase, and sale of anti-knock compounds other than tetraethyl lead and/or mixtures thereof with other substances; and
4. An amount whose ratio to the amount received by ETHYL COMPANY as dividends on the common stock of the Ethyl Dow Corporation is the same as the ratio of the aggregate payments to DU PONT COMPANY under sub-paragraphs 1, 2 and 3 aforesaid to twice the gross operating profits of ETHYL COMPANY as hereinafter defined.

It is understood and agreed that for the purpose of this Article, the term "gross manufacturing profits" shall be deemed to mean thirty-three and one-third per cent (33½%) of gross operating profits of ETHYL COMPANY and the term "gross selling profits" shall be

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deemed to mean the balance of said gross operating profits. The term "gross operating profits" shall be deemed to mean total profits and other income (except dividends from Ethyl Dow Corporation); during subject calendar year, directly and indirectly resulting from manufacture, purchase, and sale of tetraethyl lead and other anti-knock compounds and materials used in the manufacture thereof in the United States of America and from importing said products into and exporting said products from the United States of America, without deduction for taxes based on income or profits or for bonuses paid to employees of Ethyl Company, but minus:

1. Interest during subject calendar year on the secured funded debt of ETHYL COMPANY incurred in connection with the manufacture, purchase, and sale of tetraethyl lead and other anti-knock compounds and ingredients therefor in the United States.
2. Royalties paid General Motors Corporation for subject calendar year under the terms of a certain agreement dated August 28, 1924, between ETHYL COMPANY, General Motors Corporation and General Motors Research Corporation.

ETHYL COMPANY hereby represents and warrants that for any calendar year during the term of this agreement the royalties paid to General Motors Corporation under the terms of said agreement dated August 28, 1924, shall not

be greater than twenty five per cent (25%) of a sum equal to said total profits and other income from manufacture, purchase, and sales of tetraethyl lead and/or other anti-knock compounds (coming within the terms of said agreement dated August 28, 1924) in the United States of America or from importing said products into and exporting said products from United States of America, but after deducting from said total profits, however, the following:

1. Interest during subject calendar year on the secured funded debt of ETHYL COMPANY; and
2. A sum equal to twenty-two and one-half per cent (22½%) of the average amount of capital and surplus (mathematical mean of the amount employed at the beginning and the end of the accounting period) employed by ETHYL COMPANY during the subject calendar year in its business of selling and distributing (but not manufacturing) tetraethyl lead or other anti-knock compounds; and

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3. Bonuses during the subject calendar year to employees of ETHYL COMPANY applicable to gross selling profits; and
4. Income or profits taxes applicable to the subject calendar year on gross selling profits; and
5. A sum equal to the gross manufacturing profits of ETHYL COMPANY during subject calendar year.

The interest, royalties, bonuses, taxes and sums next above specified may be based, if necessary, upon estimates arrived at from the figures of the preceding year and upon the current business and shall be computed in the manner set forth in Exhibit A, annexed hereto and made a part

hereof. The payments to DU PONT COMPANY under the provisions of this Article shall be made within thirty (30) days after the end of each calendar month and may be based, if necessary, upon estimates arrived at from figures of the preceding year and upon current business and shall be subject to adjustment at the end of each calendar year during the term of this agreement. It is understood and agreed that the payments made to DU PONT COMPANY shall be deemed fixed charges or deductions in determining net earnings of ETHYL COMPANY but such payments shall not be deducted in determining gross operating profits of ETHYL COMPANY as herein defined. In the event this agreement is terminated prior to the end of any calendar year, the compensation due Du Pont Company hereunder for the subject period shall be determined on the basis of the portion of such year this agreement was in effect.

ARTICLE VIII

ACCOUNTING

ETHYL COMPANY agrees to keep true and accurate books of account showing said gross operating profits and gross manufacturing profits as defined in Article VII hereof, and to give unconditional access thereto, during business hours, to DU PONT COMPANY and further agrees to render at the time compensation to DU PONT COMPANY is paid, a true and accurate statement in writing showing the profits as aforesaid, and the details of the computation thereof. The yearly

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statement thereof shall be certified by Price, Waterhouse & Company, Public Accountants, or by a substitute firm to be selected by said parties in case of the inability of said accounting firm to act.

ARTICLE IX

NEW TETRAETHYL LEAD OR SODIUM PLANTS

A. DU PONT COMPANY agrees to erect at the cost and for the account and risk of ETHYL COMPANY such new plants for tetraethyl lead and/or blending and other anti-knock compounds, of the type and under conditions determined by mutual agreement of the parties, in the United States of America, as ETHYL COMPANY may from time to time during the term of this agreement request in writing. ETHYL COMPANY shall advance to DU PONT COMPANY from time to time necessary funds, without interest, for the construction of any such plants and shall promptly reimburse DU PONT COMPANY for its costs so incurred. At the written request of ETHYL COMPANY, DU PONT COMPANY will operate any or all of such new plants upon the same terms and conditions as herein stated for No. 5 and No. 6 Lead Plants at Baton Rouge, Louisiana, excepting the obligation to furnish ethyl chloride for any such new plant, and without the payment by ETHYL COMPANY to DU PONT COMPANY of any additional compensation except as provided in this agreement.

B. DU PONT COMPANY agrees to erect, at the cost and for the account and risk of ETHYL COMPANY, such new plants in the United States of America, for the production of sodium as ETHYL COMPANY may, from time to time during the term of this agreement, request in writing. Said plant or plants will be constructed to employ the process now used by DU PONT COMPANY at Niagara Falls, New York, with such improvements thereon as the parties hereto may have theretofore effected. ETHYL COMPANY shall advance to DU PONT COMPANY, from time to time, the necessary funds, without interest, for the construction of any such plants and shall promptly reimburse DU PONT COM-

PANY for its cost. At the written request of ETHYL COMPANY, DU PONT COMPANY

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will operate any or all of such new sodium plants, subject to the terms and conditions specified in this agreement for the operation of said Baton Rouge sodium plant, excepting, however, that in respect to any such plants no guarantee of maximum cost of production shall apply. For services rendered in connection with the operation of any such new sodium plants, DU PONT COMPANY shall receive no additional compensation except as provided in this agreement.

C. Nothing in this Article contained shall obligate DU PONT COMPANY to construct any such plant or plants (tetraethyl lead, other anti-knock compound or sodium), the completion of which by DU PONT COMPANY with reasonable diligence, would be subsequent to the period of operation of said "Deepwater Plants" by DU PONT COMPANY for ETHYL COMPANY. If ETHYL COMPANY shall request DU PONT COMPANY in writing, to build any such new plant, DU PONT COMPANY shall advise ETHYL COMPANY, in writing, within sixty (60) days thereafter whether such plant can or cannot be completed prior to the termination of this agreement. If DU PONT COMPANY advises that such plant cannot be so completed then ETHYL COMPANY shall have the right to construct any such new plant for its own account, provided construction is begun not later than one (1) year prior to the expiration of this agreement, and provided, further, that such new plant is fully completed not later than six (6) months after the expiration of this agreement.

D. Nothing in this agreement contained shall be construed to grant to either party any right, license or privilege to use in any lead-sodium alloy, ethyl chloride or tetraethyl

lead or in other anti-knock plant or in any sodium plant any invention, process or design of the other party excepting (1) with respect to lead-sodium alloy, ethyl chloride and anti-knock compounds, under and subject to the terms of the License Agreement between the parties hereto dated January 1, 1938, and (2) with respect to sodium, under and subject to the provisions of this Article IX and Article VI hereof.

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E. DU PONT COMPANY agrees to keep complete and accurate books and records showing costs of construction, operation and maintenance of any plant constructed, operated or maintained by DU PONT COMPANY for ETHYL COMPANY hereunder and to give unconditional access thereto to ETHYL COMPANY's authorized representatives during business hours.

ARTICLE X

QUALITY AND QUANTITY

A. The quantity (not in excess of capacity of plants as determined by DU PONT COMPANY) and quality of the products manufactured by DU PONT COMPANY in any plant operated for the account of ETHYL COMPANY hereunder shall be determined by ETHYL COMPANY and the processes and equipment used shall be determined by mutual agreement, the parties recognizing that new processes or equipment relating to the manufacture of lead-sodium alloy, ethyl chloride and anti-knock compounds may be developed or invented during the term of this agreement. If DU PONT COMPANY shall agree to manufacture lead-sodium alloy, ethyl chloride and anti-knock compounds with such new processes or equipment, the same terms and conditions as in this agreement stated shall apply.

The physical operation of any plant hereunder by DU PONT COMPANY for ETHYL COMPANY shall be under the sole control of DU PONT COMPANY and no changes shall be made by ETHYL COMPANY in equipment or processes in any such plant without the approval of DU PONT COMPANY.

B. It is understood and agreed by the parties hereto that DU PONT COMPANY does not warrant or guarantee the quantity or quality of any product manufactured by DU PONT COMPANY in any plant operated for the account of ETHYL COMPANY under this agreement but DU PONT COMPANY does agree to use its best efforts to produce products of the quantity and quality specified by ETHYL COMPANY. Nothing contained in this paragraph B shall affect the provisions of paragraph A of Article VI hereof.

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ARTICLE XI

PURCHASE OF SODIUM

ETHYL COMPANY agrees that if, during the period of this agreement, it receives from reliable and financially responsible concerns bona fide offers to supply to it twenty five per cent (25%) or more of its total requirements of sodium for the remainder of the term of this agreement, at a price less than DU PONT COMPANY's price as set forth in Paragraph C of Article III aforesaid, then ETHYL COMPANY will promptly forward a copy of such offer or offers to DU PONT COMPANY. Within thirty (30) days after the receipt by DU PONT COMPANY of any such offer or offers DU PONT COMPANY will either (1) supply such percentage of ETHYL COMPANY's total requirements of sodium at the price stated in said offer or offers for the remainder of the term

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of this agreement, or (2) permit ETHYL COMPANY to purchase pursuant to the terms of said offer or offers, such percentage of its sodium requirements. DU PONT COMPANY shall be released throughout the remaining period of this agreement from its obligation to sell and deliver such percentage of ETHYL COMPANY'S sodium requirements as ETHYL COMPANY shall so elect to purchase elsewhere.

ARTICLE XII

SALE OF TETRAETHYL LEAD FOR OTHER THAN ANTI-KNOCK PURPOSES

In addition to all other obligations of ETHYL COMPANY under the provisions of this agreement, ETHYL COMPANY agrees to sell to DU PONT COMPANY and DU PONT COMPANY agrees to purchase from ETHYL COMPANY, DU PONT COMPANY'S entire requirements of tetraethyl lead, up to five hundred thousand (500,000) pounds per year, for use for other than for anti-knock purposes during the term of this agreement, at cost plus fifteen per cent (15%). Such quantity of tetraethyl lead shall not be included in computing compensation to DU PONT COMPANY under Article VII hereof.

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ARTICLE XIII

CONSTRUCTION COSTS

It shall be the general rule applicable to all accountings, computations or estimates of all items comprising the cost to DU PONT COMPANY of the construction of the tetraethyl

lead, other anti-knock compound and sodium plants provided for in this agreement, that DU PONT COMPANY shall be fully reimbursed for all expenditures or losses of every kind and nature whatsoever incurred by it in carrying on the said construction. Without limiting the foregoing, the following shall be included in computing costs to DU PONT COMPANY.

- (1) Salaries and expenses of all engineers, technical specialists, administrative staff and supervisory management of labor—

To include direct salaries to such persons actively at work on the construction site as well as a fair proportional amount of DU PONT COMPANY's overhead, salaries and expenses wherever incurred.

- (2) Fair proportional amount of salaries and expenses of supervisory, ordering and estimating forces of DU PONT COMPANY.
- (3) Fair proportional amount of expenses and salaries of DU PONT COMPANY's Service Departments.
- (4) Expenses of field supervision—to include salaries of all engineers, clerical help, instrument men, rodmen, etc., traveling and living expenses of field supervision forces, and fair proportional amount of DU PONT COMPANY's overhead, salaries and expense.
- (5) Field expenses—to include all expenses in connection with the actual maintenance and operation of the construction activities, such as protection, sanitation, safety, personal injuries, medical expenses, hospital expenses, ambulance services, workmen's compensation, property damage, public liability, etc. In the

event DU PONT COMPANY is reimbursed for any losses or liability described herein from outside insurance or self-insurance reserve funds, then such losses or liability shall not be a proper charge herein against ETHYL COMPANY.

- (6) Employment of labor—to include all expenses in connection with the actual employment of labor, such as the expenses of bringing in labor, traveling expenses, labor scouts, transportation and meals of labor enroute, employment office, etc.
- (7) Traveling expenses of all persons.
- (8) Office expenses—to include field telephones, telegrams, stationery, office supplies, postage, typewriters, etc., cost of blue prints, both field and elsewhere.

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- (9) Surveying supplies.
- (10) Light, heat, power and water—to include such expenses actually incurred therefor in the construction work.
- (11) Permit fees—cost of all permits secured in connection with buildings, water lines, roadways, etc.
- (12) Cost of insurance for property damage and personal injury—to include all premiums paid on all insurance covering fire, wind, water, explosion, flood, lightning, workmen's compensation, personal injury, public liability, etc. Further, in the event DU PONT COMPANY shall follow a program of self-insurance, thereby setting up a reserve fund for the purpose of such self-insurance on any liability or hazard connected with said construction activities, the amount

set aside in the self-insurance reserve shall be charged to ETHYL COMPANY as a legitimate item of cost. In determining the amount to be set aside for such purpose, DU PONT COMPANY will follow the principles heretofore used by it, but the charge to ETHYL COMPANY for any insurance carried by DU PONT COMPANY in its insurance reserves shall not exceed premiums which would be payable on comparable policies with an insurance company.

- (13) Cost of transportation for field force—to include actual transportation in activities pertaining to the construction work, automobiles, etc.
- (14) Progress photographs, to include cost of films, developing, etc.
- (15) Miscellaneous supplies:
 - (a) Labor of unloading materials
 - (b) Freight and express
- (16) Construction materials:
 - (a) Labor of unloading materials
 - (b) Freight, express and other costs of transportation.
- (17) Labor—to include wages paid to all labor engaged directly or indirectly in construction activities and in the cleaning up, alterations, development, etc., after preliminary stage of completion has been reached.
- (18) Apparatus, machinery, fixtures, tools and other materials and supplies.
- (19) Installation of servicing facilities—to include pipe lines, power lines, conveyance lines, tracks, electric

lines, waste disposal systems, storage spaces, offices, laboratories, servicing buildings, tanks, water supply, telephone lines, tools, and other equipment.

- (20) Legal fees incurred by DU PONT COMPANY in carrying on of construction activities and final conveyance of title to plants, and to include fair proportional amount of DU PONT COMPANY's Legal Department overhead.
- (21) Taxes and rentals.

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- (22) All expenditures for labor, supervision, supplies and materials involved in experimentation and development of plant system during and after construction in preparation for future operation.
- (23) Cost of tools and machinery used in the construction of plant.
- (24) Cost of all construction materials and supplies on hand at date of completion of plant.
- (25) Cost of labor, supervision, supplies and materials and other expenses in connection with alteration, modification, repair and testing of plant and plant system.
- (26) Laboratory expenses including expert technicians' fees and expenses incurred in testing equipment, materials and processes of operation.
- (27) Cost of design and plans.
- (28) Taxes and incidental expenses incurred in the construction or transfer of the plant.

ARTICLE XIV**FORCE MAJEURE**

Neither party shall be responsible to the other for failure to perform any of the obligations imposed by this agreement provided such failure shall be occasioned by fire, flood, explosion, lightning, windstorm, earthquake, subsidence of soil, failure of machinery or equipment or supply of materials, discontinuity in the supply of power, governmental interference, civil commotion, riot, war, strikes, labor disturbance, transportation difficulties, labor shortage or by any cause of like or unlike nature beyond the reasonable control of such party.

ARTICLE XV**INDEMNITY**

ETHYL COMPANY agrees to save and hold DU PONT COMPANY harmless from any and all liability including legal expenses incidental thereto, arising out of DU PONT COMPANY's operation, maintenance or construction of any plant hereunder for ETHYL COMPANY. DU PONT COMPANY shall promptly notify ETHYL COMPANY of any claim made or suit filed against DU PONT COMPANY in connection with any such liability, and ETHYL COMPANY shall have the right, at its option but entirely at its own expense, to take over the settlement or defense of any such claim or suit.

ARTICLE XVI**ADDRESSES**

The addresses of the parties are as follows:

**E. I. DU PONT DE NEMOURS & COMPANY,
WILMINGTON, DELAWARE**

**ETHYL GASOLINE CORPORATION,
405 LEXINGTON AVENUE,
NEW YORK CITY**

ARTICLE XVII**TERM OF AGREEMENT**

This agreement shall be effective as of the date hereof and shall continue in force for seven (7) years; it being understood, however, that in the event ETHYL COMPANY does not manufacture in the United States of America anti-knock compounds for any two successive years of the term of this agreement, then either party may terminate this agreement on not less than thirty (30) days' written notice given to the other party.

If, during any two successive years of the term of this agreement, payment of compensation to DU PONT COMPANY under Article VII of this agreement shall be less than seven per cent (7%) of the gross book value of said "Deepwater Plants" as carried on the books of DU PONT COMPANY as of the date of this agreement, before deduction for depreciation, then ETHYL COMPANY, at the written request of DU PONT COMPANY, shall either (a) surrender said agreement of lease and cancel this agreement, or (b) definitely obligate itself to pay to DU PONT COMPANY annually during the balance of the term of said agreement

of lease, as compensation under Article VII of this agreement a minimum amount equal to seven per cent (7%) of the gross book value of said "Deepwater Plants" as carried on the books of DU PONT COMPANY as of the date of this agreement before deduction for depreciation. Upon ETHYL COMPANY assuming said definite minimum obligation it is understood that the provisions of Article VII hereof shall continue to apply, but if in any year thereafter the compensation to DU PONT COMPANY computed in the manner therein set forth shall be less than said minimum amount, then ETHYL COMPANY shall promptly pay the difference to DU PONT COMPANY.

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The termination or cancellation of this agreement for any reason shall not affect the provisions with respect to sodium licenses or the royalties payable therefor.

ARTICLE XVIII

ARBITRATION

In the event the parties hereto are unable to agree as to the construction or application of any of the accounting provisions of this agreement, the License Agreement or the Lease Agreement, of even date, either party may have such dispute determined by Price, Waterhouse & Co., whose decision thereon shall be final and binding on the parties. The cost of such services shall be borne by the party requesting such determination.

ARTICLE XIX

MISCELLANEOUS

This agreement shall supersede any prior agreement between the parties relating to anti-knock compounds or

the construction of plants at Baton Rouge, Louisiana. This agreement shall be assignable by either of the parties to the successor of its entire business relating to anti-knock compounds but this agreement shall not be otherwise assignable.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be signed and their respective seals to be hereto affixed, in duplicate, by their officers or representatives thereunto duly authorized, this *sixth* day of January, 1938.

ETHYL GASOLINE CORPORATION

By *E. W. Webb*
President

(SEAL)

ATTEST

J. C. Gonsales
Secretary

E. I. DU PONT DE NEMOURS & COMPANY

By *E. G. Robinson*
General Manager

(SEAL)

ATTEST

W. F. Raskob
Secretary

EXHIBIT AROYALTIES DUE GENERAL MOTORS CORPORATION

The royalties due General Motors Corporation are calculated by a method which involves (1) gross manufacturing profits and (2) gross selling profits. Both (1) and (2) are fractions of gross operating profits, the determination of which is dependent upon said royalties. The payments to DU PONT COMPANY also involve said royalties. Said royalties and hence payment to DU PONT COMPANY, can therefore be computed by algebraic means.

Let:

A = Total profits of ETHYL COMPANY from manufacture, purchase, and sales of anti-knock compounds.

B = Interest on secured funded debt of ETHYL COMPANY.

C = Average amount of capital employed by the ETHYL COMPANY in selling and distributing anti-knock compounds.

D = Bonuses to employes of ETHYL COMPANY applicable to gross selling profits.

n = Effective net income tax rate.

X = Royalties due General Motors Corporation.

Then:

$$\text{Gross operating profits} = A - B - X$$

$$\text{Gross manufacturing profits} = 0.333\dots(A-B-X)$$

$$\text{Gross selling profits} = 0.666\dots(A-B-X)$$

$$\text{Income taxes on gross selling profits} = n \cdot [0.666\dots(A-B-X)-D]$$

$$X = 0.25 \left\{ A - B - 0.225 C - D - n [0.666\dots(A-B-X) - D] - 0.333\dots \right\} (A-B-X)$$

The following example is illustrative.

Total profits from operations (A) = \$2,000,000.

Interest on secured funded debt of
ETHYL COMPANY (B) = \$ 140,000.

Amount employed by ETHYL COMPANY in selling, etc. (C) = \$ 500,000.

Bonuses applicable to profits from sales (D) = \$ 50,000.

Effective net income tax rate = 15%

Then:

$$X = 0.25 \left\{ 2,000,000 - 140,000 - 0.225 (500,000) - 50,000 \right. \\ \left. - 0.15 [0.666 \dots (1,860,000 - X) - 50,000] - 0.333 \dots (1,860,000 - X) \right)$$

$$X = 252,000$$

Total profits from operations (A) = 2,000,000

Interest on secured funded debt (B) = 140,000

Royalty (X) = 252,000

Gross operating profits = 1,608,000

Gross Manufacturing profits = 536,000

Gross selling profits = 1,072,000

For the purpose of this example no calculations are carried beyond the nearest \$1000.

EXHIBIT B

In the following example, the assumed actual results are entirely arbitrary, and while the data are set up to simulate what might be experienced, none of the assumed actual results are represented to be based upon either experience or expectations.

Item	Assumed Actual Results			Adjusted-Average Cost per 100 # Na	Notes
	Quantity used per 100 # Na	Unit Price	Cost per 100 # Na		
Crude salt	270#	\$3.50/T.	\$.472	\$.425	(1)
Power	560 KWH	\$.004	2.240	1.960	(2)
Labor	2.0 man-hrs.	\$.75	1.500	1.600	(3)
Salaries	—	—	.200	0	(4)
Overhead	—	—	1.000	1.120	(5)
Depreciation: equipment	—	5%/yr.	.750	1.050	(6)
" buildings	—	5%/yr.	.200	.120	(7)
Other cost elements	—	—	.800	1.300	(8)
Gross cost, before chlorine credit			\$7.162	\$ 7.575	
Chlorine credit	(150#)	\$.005	(.750)	(.750)	(9)
Net factory cost			\$6.412	\$ 6.825	

Comment:

If the results indicated by the foregoing prevailed for a production of less than 9,500,000 pounds per year, the guaranteed cost would be met and no reduction in royalty could be claimed. However, if the production had been from 9,500,000 to 10,000,000 pounds for the year, the royalty would be reduced by .175¢ per pound, and if the production had been 10,000,000 pounds or more, the royalty would be reduced by .325¢ per pound.

Notes:

1. Crude salt: The adjusted cost is arrived at by multiplying the quantity actually used by a unit price of \$3.15 per ton.

2. Power: The adjusted cost is arrived at by multiplying the quantity actually used by a unit price of \$.0035 per KWH.

3. Labor: The adjusted cost is obtained by multiplying the number of man-hours actually employed by a unit price of 80¢ per man-hour.

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4. Salaries: In the adjusted cost the salaries item is included in "other cost elements".

5. Overhead: The adjusted overhead cost is 70% of the adjusted labor cost, or 56¢ per man-hour of labor.

6. Depreciation on equipment: The adjusted cost bears the same ratio to the actual cost as 7% bears to the actual depreciation rate.

7. Depreciation on buildings: The adjusted cost bears the same ratio to the actual cost as 3% bears to the actual depreciation rate.

8. Other cost elements: By agreement, the adjusted cost includes 1.3¢ per pound as allowance for other cost elements.

9. Chlorine credit: In the adjusted cost the chlorine recovered from the process is credited at \$.005 per pound of chlorine regardless of whatever value may otherwise be assigned.

NOTE: At lower right of all pages is written "GMC-847c"; in left margin of page 29 is stamped "Form approved, Legal Department . . . Asst. Director"; in the space provided in this stamp is written the name of H. C. Haskell; beneath this stamp are written three illegible sets of initials; italics indicate handwriting.

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LICENSE AGREEMENT

THIS AGREEMENT made as of the 1st day of January, 1938, between E. I. DU PONT DE NEMOURS & COMPANY, a corporation of the State of Delaware, hereinafter called DU PONT COMPANY, and ETHYL GASOLINE CORPORATION, a corporation of the State of Delaware, hereinafter called ETHYL COMPANY,

WITNESSETH THAT

WHEREAS, DU PONT COMPANY for many years has manufactured anti-knock compounds containing tetraethyl lead under ETHYL COMPANY's United States Patents Nos. 1,612,131, 1,639,947 and 1,697,245 and sold said anti-knock compounds to ETHYL COMPANY;

WHEREAS, the parties desire to adjust their relations to one another with respect to certain phases of the anti-knock compound business;

Now, THEREFORE, in consideration of One Dollar (\$1.00), each party to the other paid, and of other good and valuable considerations, receipt whereof is hereby respectively acknowledged, the parties agree as follows:

ARTICLE I

In the construction and interpretation of this agreement:

- (a) The term "anti-knock compounds" shall be deemed to mean tetraethyl lead, and/or any compound or mixture which, added to motor fuel in the proportion of not more than one per cent (1%) by volume, or added to the explosive charge of an

internal combustion engine in the proportion equivalent to not more than one per cent (1%), by volume of the liquid fuel, shall have an effect in inhibiting detonation which is equivalent to that produced by one (1) cubic centimeter of tetraethyl lead per United States gallon of average commercial gasoline as currently marketed.

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- (b) The term "subsidiaries" shall be deemed to mean all corporations in which the parent company owns or controls directly or indirectly, more than fifty per cent (50%) of the stock having the right to vote for directors. For the purpose of this definition, the stock owned or controlled by the parent company shall be deemed to include all stock having the right to vote for directors and owned or controlled directly or indirectly by any of its subsidiaries as defined in the preceding sentence.
- (c) The term "lead sodium alloy" shall be deemed to mean an alloy of lead and sodium made by bringing together lead and sodium which have been previously manufactured as separate products, capable of commercial sale as such.
- (d) The term "the field of this agreement" shall be deemed to mean the manufacture of anti-knock compounds, lead sodium alloy, and ethyl chloride, but not the manufacture of commercially available materials used in the manufacture thereof.

Wherever the parties are referred to in this agreement; it is understood that the subsidiaries of each party are included with the party itself except as stated in Article III hereof.

ARTICLE II

A. Each of the parties agrees that it will disclose fully and promptly to the other, during the term of that certain agreement of even date herewith between the parties, identified as Manufacturing Service Agreement, any information which it possesses relating to the field of this agreement. Each of the parties agrees that while, during the term of said Manufacturing Service Agreement it operates or has operated for it any plant in the United States for the manufacture of lead sodium alloy, ethyl chloride, or anti-knock compounds, or for blending of ingredients to form anti-knock compounds, it will permit duly authorized representatives of the other party free access to said plant and/or plants to familiarize themselves with operations of said plant and/or plants to the end that any such representative or representatives of the other party shall have the opportunity to become familiar with the knowledge and experience of the party that

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is operating said plant and/or plants. All secret information relating to a secret process, compound or equipment owned and revealed by one party to the other shall be kept secret and confidential by the party receiving it and shall be disclosed by it only as necessary to permit its use in the enjoyment of the licenses herein granted and all sublicenses shall be subject to this condition. The party so acquiring such secret information shall be entitled to use it only in accordance with the licenses herein granted.

B. DU PONT COMPANY grants to ETHYL COMPANY a royalty-free license to manufacture, use and sell anti-knock compounds and to employ therefor any patented, patentable or secret compounds, processes or designs of DU PONT COMPANY within the field of this agreement which

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DU PONT COMPANY now owns or controls or may own or control prior to the termination of said Manufacturing Service Agreement but subject, however, to the following conditions:

- (1) No license is granted directly or by implication under any claim of any patent (or for the use of any secret) which claim (or secret) covers (or relates to) a composition or a compound which as of the date of this agreement is not known to Du PONT COMPANY to be an anti-knock compound, and which claim (or secret) is based upon an invention (or discovery) made prior to the date of this agreement and owned or controlled by DU PONT COMPANY prior to such date.
- (2) Subject to Paragraph D of this Article II, the license runs for all countries of the world and for the full life of the patents licensed, respectively, and any extensions or renewals thereof, and in the case of any secret compound, process or design for so long as the same remains secret except that no license is granted for ethyl chloride outside of the United States.
- (3) The license is non-exclusive for the United States and for anti-knock compounds other than lead alkyls outside of the United States; it is exclusive for lead alkyls including lead sodium alloy, therefor outside of the United States.
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- (4) The license is limited to the use of the licensed processes for the manufacture of products sold for anti-knock purposes except that ethyl chloride manufactured under the license may be sold or used for any purpose.

- (5) The license is non-transferable, but sub-licenses may be granted under this license by ETHYL COMPANY only for operations conducted outside the United States and there only to sub-licensees in which ETHYL COMPANY has a financial interest. The license rights under foreign patents (i.e. patents other than U. S. patents) are not subject to cancellation as hereinafter provided.

C. ETHYL COMPANY grants to DU PONT COMPANY a non-exclusive, royalty-free license to manufacture, use and sell anti-knock compounds and to employ therefor any patented, patentable or secret compounds, processes or designs of ETHYL COMPANY within the field of this agreement which ETHYL COMPANY now owns or controls or may own or control prior to the termination of said Manufacturing Service Agreement but subject, however, to the following conditions:

- (1) No license is granted directly or by implication under any claim of any patent (or for the use of any secret) which claim covers (or secret constitutes) an anti-knock compound per se or a motor fuel containing the same, or the use of such compound for anti-knock purposes, which patent (or secret) is based upon an invention (or discovery) made prior to the date of this agreement and owned or controlled by ETHYL COMPANY prior to such date.
- (2) Subject to paragraph D of this Article II, the license begins as of the termination of said Manufacturing Service Agreement (except that the

license for ethyl chloride begins as of the date of this agreement) and continues for the full life of the patents licensed respectively, and any extensions or renewals thereof, and in the case of any secret compound, process or design, for so long as the same remains secret.

- (3) The license is limited to the use of the licensed processes for the manufacture of products sold for anti-knock purposes except that ethyl chloride manufactured under the license may be sold or used for any purpose.
- (4) The license is non-transferable, and no sub-license may be granted thereunder and it shall be limited to operations in the United States.

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D. In the event that ETHYL COMPANY does not offer in writing to purchase from DU PONT COMPANY during each twelve (12) months' period after the termination of said Manufacturing Service Agreement, at least one-half of ETHYL COMPANY's requirements (for sale within and export from the United States) of tetraethyl lead at the purchase price set forth in Paragraph E (1), of this Article II, and of other anti-knock compounds protected by United States patent rights of one of the parties, at the purchase price set forth in Paragraph E (2), of this Article II, then all licenses (except license rights under foreign patents) which have been granted by either party to the other, under this agreement, or under said Manufacturing Service Agreement, shall thereupon expire, cease and determine. In the event said licenses shall cease and determine for the reasons next above specified, ETHYL COMPANY shall grant to

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DU PONT COMPANY non-exclusive licenses under any patent or patents or rights to obtain patents (and the right to employ any secret process or design) owned or controlled by ETHYL COMPANY, during the term of said Manufacturing Service Agreement and based upon any invention (or discovery) made during the term of said Manufacturing Service Agreement and relating to the manufacture of lead alkyls. Said non-exclusive licenses are non-transferable, and no sub-licenses may be granted thereunder. They shall be limited to operations in the United States and shall run for the full life of the patents

—6—

licensed respectively and any extensions or renewals thereof, and in the case of any secret compound, process or design for so long as the same remains secret. If ETHYL COMPANY does offer in writing to purchase from DU PONT COMPANY one-half of its requirements as aforesaid, then the non-exclusive licenses granted hereunder to DU PONT COMPANY under inventions made during the term of said Manufacturing Service Agreement insofar as said inventions relate to lead alkyls shall be limited (except for the manufacture of anti-knock compounds for sale to the ETHYL COMPANY) to the use of the licensed processes for the manufacture of an anti-knock compound, the use of which as an anti-knock compound is not covered by an unexpired United States patent owned or controlled by one of the parties.

Each of said offers of ETHYL COMPANY (except the first said Manufacturing Service Agreement is terminated prior to December, 31, 1944) to purchase one-half of its requirements as provided for in this Paragraph D shall, if made, be made to DU PONT COMPANY nine months in advance of the beginning of the subject twelve months' period and DU PONT COMPANY shall accept or refuse in writing such offer within ninety (90) days thereafter.

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DU PONT COMPANY may accept part of the total offered but in no event less than its plant capacity.

E. (1) The price to be paid by ETHYL COMPANY for tetraethyl lead purchased under the provisions of Paragraph D of this Article II, during any year after the termination of said Manufacturing Service Agreement and prior to January 1, 1948, shall be such as to yield a net profit to DU PONT COMPANY, before income and profit taxes, equal to:

(a) 50% of the net profit and income of ETHYL COMPANY (before income and profit taxes and excluding dividends from Ethyl Dow Corporation) directly or indirectly resulting from the manufacture, purchase and sale of tetraethyl lead and/or mixtures thereof with other substances up to an aggregate amount of 53,000,000 pounds of tetraethyl lead content in such year, and

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(b) 11-1/9% of the net profit and income of ETHYL COMPANY (before income and profit taxes and excluding dividends from Ethyl Dow Corporation) during such year, directly or indirectly resulting from the manufacture, purchase and sale of tetraethyl lead and/or mixtures thereof with other substances in excess of 53,000,000 pounds of tetraethyl lead content.

For the year 1948, the price for tetraethyl lead to be paid by ETHYL COMPANY to DU PONT COMPANY shall be such as to yield a net profit per pound to the DU PONT COMPANY, before income and profit taxes, equal to the yearly average

profit per pound made by DU PONT COMPANY during the three preceding years.

In no case shall the price for tetraethyl lead give DU PONT COMPANY less than a net return of 7% per year on the investment employed by it in the manufacture of such tetraethyl lead for ETHYL COMPANY.

For each year beginning 1949, the price per pound for tetraethyl lead to be paid by ETHYL COMPANY to DU PONT COMPANY shall, if necessary, be settled by arbitration, not later than nine months prior to the beginning of any calendar year, in the City of New York under the law of the State of New York. It is agreed that ETHYL COMPANY shall appoint one arbitrator, and DU PONT COMPANY shall appoint another, and the two so appointed shall appoint a third, and the decision of the arbitrators or a majority thereof shall be final and binding on the parties. Should ETHYL COMPANY refuse or neglect to appoint, or should DU PONT COMPANY refuse or neglect to appoint an arbitrator within fifteen (15) days after being requested in writing so to do, the arbitrator appointed by the other party may decide the question involved, and his decision shall be final and binding on the parties. Should both parties appoint arbitrators and the two so appointed be unable or unwilling to agree upon a third within ten (10) days, the third arbitrator shall be appointed at the request of either party in writing by the Senior Judge of the Federal District Court of the Southern District of New York, or should he refuse or neglect

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to appoint said third arbitrator within a period of ten (10) days after being requested so to do, by the Chairman or Acting Chairman of the Arbitration Committee of the Chamber of Commerce of the City of New York. The arbitrators

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may assess the cost of the arbitration including their own charges.

E. (2) In the case of any anti-knock compound, other than tetraethyl lead, the price to be paid by ETHYL COMPANY to DU PONT COMPANY for any year shall be such as to yield a net profit to DU PONT COMPANY, before income and profit taxes, equal to 25% of the net profit and income of ETHYL COMPANY during such year (before income and profit taxes, and excluding dividends from Ethyl Dow Corporation) directly or indirectly resulting from the manufacture, purchase and sale of such anti-knock compound, but in no event shall such price give DU PONT COMPANY less than a net return of seven percent (7%) per year on the investment employed by it in the manufacture of said anti-knock compound. If new investment is required to be made by DU PONT COMPANY for the manufacture of any such anti-knock compound, the price to be paid by ETHYL COMPANY shall include provision for the amortization of such investment over a period of not exceeding five years, provided DU PONT COMPANY shall agree to supply said anti-knock compound on the aforesaid price basis until such amortization has been effected, and thereafter for five years at the same price basis less the amortization allowance and without charge for depreciation on the investment amortized as above. ETHYL COMPANY shall have the right to discontinue the purchase of any such anti-knock compounds upon payment to DU PONT COMPANY of a sum equal to the unamortized investment.

For the purpose of this paragraph, fractional parts of any year shall be treated on the basis of its proportion to a whole year.

It is the intention that anti-knock compounds delivered by DU PONT COMPANY to ETHYL COMPANY, pursuant to

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Paragraph D of this Article II, will be billed monthly on
the basis of the estimated

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price, and an adjustment shall be made at the end of each
year on the basis of the final accounting for such year.

F. Nothing in this agreement contained shall obligate
either party to grant licenses to the other party with respect
to any inventions or discoveries acquired subsequent to the
date of this agreement, except upon the same terms and
conditions imposed on the party granting such licenses in
acquiring any of said inventions or discoveries or rights
with respect thereto.

ARTICLE III

If any subsidiary of DU PONT COMPANY shall fail to
comply with the terms of this agreement said non-complying
subsidiary shall be deemed to have renounced the benefits
hereof, and DU PONT COMPANY agrees to hold ETHYL
COMPANY harmless from any loss or damage incurred by
reason of such non-compliance by any non-complying sub-
sidiary; provided, however, that the liability of DU PONT
COMPANY under this Article is expressly limited to the
aggregate amount of profits directly or indirectly received
by DU PONT COMPANY from any non-complying subsidiary
by reason of and/or resulting from such non-compliance.

ARTICLE IV

ETHYL COMPANY represents and warrants that it has
entered into license agreements with respect to anti-knock
compounds dated August 28, 1924 with Standard Oil Com-

pany (a corporation of New Jersey), and Standard Development Company (a corporation of Delaware), and with General Motors Corporation (a corporation of Delaware) and General Motors Research Corporation (a corporation of Delaware), which agreements were amended on January 1, 1938, and a license agreement with respect to ethyl chloride dated January 1, 1938 with Standard Oil Development Company, a corporation of Delaware, and that ETHYL COMPANY will at no time consent to any restriction, modification or cancellation of said agreements which would affect any interest or rights of the DU PONT COMPANY under this agreement or under said Manufacturing Service Agreement.

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Nothing in this agreement contained shall apply to the manufacture of sodium or any rights or licenses granted or to be granted by either party to the other with respect to the manufacture of sodium.

ARTICLE V

DU PONT COMPANY represents that it has no commitments with other parties embracing anti-knock compounds as such but it is understood and agreed by the parties hereto that the rights herein granted by DU PONT COMPANY to ETHYL COMPANY in the field of this agreement are subject to any prior commitments of DU PONT COMPANY with respect to any composition or compound which, as of the date of this agreement, is not known to the DU PONT COMPANY to be an anti-knock compound.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be signed and their respective seals to be hereto affixed, in duplicate, by their officers or representa-

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tives thereunto duly authorized, this *sixth* day of January,
1938.

E. I. DU PONT DE NEMOURS & COMPANY

By *E. G. Robinson*

General Manager

(SEAL)

ATTEST

W. F. Raskob

Secretary

ETHYL GASOLINE CORPORATION

By *E. W. Webb*

President

(SEAL)

ATTEST

J. C. Gonzalez

Secretary

NOTE: At lower right of all pages is written "GMC-847b"; in left margin of page 10 is stamped "Form approved, Legal Department . . . Asst. Director"; in the space provided in this stamp is written the name of H. C. Haskell; above this stamp are written two illegible sets of initials; at bottom of first page is written the word "license"; italics indicate handwriting.

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LICENSE AGREEMENT

The parties to this agreement, made as of the 1st day of January, 1938, are STANDARD OIL DEVELOPMENT COMPANY, a corporation of the State of Delaware, hereinafter referred to as DEVELOPMENT, and ETHYL GASOLINE CORPORATION, a corporation of the State of Delaware, herein-after referred to as ETHYL.

In consideration of the premises and the mutual covenants and agreements herein expressed it is agreed as follows:

ARTICLE I

A. DEVELOPMENT hereby grants and agrees to grant to ETHYL (with full power to sub-license others without accounting to DEVELOPMENT) a non-exclusive, royalty-free license to manufacture, use and sell Ethyl Chloride, under any patented, patentable or secret compounds, processes or designs of DEVELOPMENT, which may be employed prior to December 31, 1944, in operating the Ethyl Chloride Plant now being built by DEVELOPMENT for ETHYL at Baton Rouge, Louisiana, according to the process for which said Plant has been designed.

B. ETHYL hereby grants and agrees to grant to DEVELOPMENT (with full power to sub-license others without accounting to ETHYL) a non-exclusive, royalty-free license to manufacture, use and sell Ethyl Chloride under any patented, patentable or secret compounds, processes or designs of Ethyl, which may be employed prior to December 31, 1944 in operating said Ethyl Chloride Plant according to the process for which said Plant has been designed.

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ARTICLE II

Each of the parties agrees that it will disclose fully and promptly to the other, during the term of this agreement, any information which it possesses relating to the patented, patentable or secret compounds, processes or designs described in Article I aforesaid. Each of the parties agrees that while, during the term of this Agreement it

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operates or has operated for its account said Ethyl Chloride Plant, it will permit duly authorized representatives of the other party and its sub-licensees free access to said Plant to familiarize themselves with operations therein to the end that any such representative or representatives of the other party shall have the opportunity to become familiar with the knowledge and experience of the party that is operating said Plant. All secret information relating to a secret process, compound or equipment owned and revealed by one party to the other shall be kept secret and confidential by the party receiving it and shall be disclosed by it only as necessary to permit its use in the enjoyment of the licenses herein granted, and all sub-licenses shall be subject to this condition.

ARTICLE III

This agreement shall be effective as of the date hereof and shall continue in force for seven (7) years. The licenses herein contained run for the full life of the patents licensed, respectively, and any extensions or renewals thereof, and in the case of any secret compounds, processes or designs, for so long as the same remains secret.

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IN WITNESS WHEREOF, the parties hereto have caused
these presents to be signed and their respective seals to be
hereto affixed, in duplicate, by their officers thereunto duly
authorized, as of the day and year first above written.

STANDARD OIL DEVELOPMENT COMPANY

By Frank A. Howard (signed)
President

(SEAL)

ATTEST

Ross H. Dickson (signed)
Ass't. Secretary

ETHYL GASOLINE CORPORATION

By E. W. Webb (signed)
President

(SEAL)

ATTEST

J. C. Gonzalez (signed)
Secretary

NOTE: At lower right of both pages is written "GMC-
847nn".

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AMENDMENT TO LICENSE GRANT

For and in consideration of the payment of One Dollar (\$1.00) by each of the parties hereto to the other, and of other good and valuable considerations, the receipt and sufficiency of which is hereby acknowledged, STANDARD OIL COMPANY, a corporation of New Jersey, hereinafter referred to as "STANDARD", STANDARD OIL DEVELOPMENT COMPANY, (formerly Standard Development Company), a corporation of Delaware, hereinafter referred to as "DEVELOPMENT", and the ETHYL GASOLINE CORPORATION, a corporation of Delaware, hereinafter referred to as "ETHYL COMPANY", agree as follows:

ARTICLE I

Paragraph 2 of that certain license grant from STANDARD and DEVELOPMENT to ETHYL COMPANY, dated August 28, 1924, (copy of which is annexed hereto as Exhibit A) is hereby cancelled and the following substituted therefor.

2. Any Letters Patent of the United States or of any foreign country which may in the future issue to or be acquired by STANDARD or DEVELOPMENT, or any corporation owned by STANDARD and based upon any invention made prior to January 1, 1948, and which invention relates to or consists in or comprises:

(a) Tetraethyl lead, and/or any compound or mixture which, added to motor fuel in the proportion of not

more than one per cent (1%) by volume, or added to the explosive charge of an internal combustion engine in the proportion equivalent to not more than one per cent (1%) by volume of the liquid fuel, shall have an effect in inhibiting detonation which is equivalent to that produced by one (1) cubic centimeter of tetraethyl lead per United States gallon of average commercial gasoline as currently marketed.

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(b) Any composition or anti-knock compound or mixture, including the substance defined in Sub-Paragraph (a) aforesaid as its effective detonation suppressing agent and one or more other constituents having auxiliary utility.

(c) Any method or process for manufacturing or using the substance and/or mixture defined in Sub-Paragraphs (a) and (b) aforesaid (not including, however, processes for the manufacture or refining of petroleum oil or of secondary alcohols from the unsaturated hydrocarbons of petroleum oil or products of refining the same).

(d) Any equipment or apparatus for use in manufacturing, mixing or dispensing the substance and/or mixture defined in Sub-Paragraphs (a) and (b) aforesaid.

STANDARD and DEVELOPMENT agree that they will perform all acts and execute all instruments required, under the laws of any country, to vest in the ETHYL COMPANY,

the exclusive right and license granted in said agreement dated August 28, 1924 as hereby amended.

ARTICLE II

A. STANDARD and DEVELOPMENT do hereby grant and agree to grant unto the Ethyl Company the right and license, including the right to sub-license others, to use any secret process or design which STANDARD or DEVELOPMENT now or hereafter owns or controls and which is based upon a discovery made prior to January 1, 1948, and which discovery relates to the substance and/or mixture defined in Sub-Paragraphs (a) and (b) aforesaid, or to the method or process or the equipment or apparatus defined in Sub-Paragraphs (c) and (d) aforesaid.

B. STANDARD and DEVELOPMENT do hereby agree to disclose fully and promptly to ETHYL COMPANY any information which they may possess relating to the secret processes or designs described in Sub-Paragraph A of this Article II. All such information shall be kept secret and confidential by ETHYL COMPANY and its licensees,

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and shall be disclosed by it or them only as necessary to permit its use in the enjoyment of the license herein granted.

This Article II shall be effective as of January 1, 1938.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be signed and their respective seals to be

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hereto affixed, in duplicate, by their officers thereunto duly authorized, as of January 1, 1938.

STANDARD OIL COMPANY (NEW JERSEY)

By (SGD) ORVILLE HARDEN
Vice-President

(SEAL)

ATTEST

M. H. EAMES
Ass't. Secretary

STANDARD OIL DEVELOPMENT COMPANY

By (SGD) FRANK A. HOWARD
President

(SEAL)

ATTEST

Ross H. DICKSON
Ass't. Secretary

ETHYL GASOLINE CORPORATION

By (SGD) E. W. WEBB
Vice-President

(SEAL)

ATTEST

J. C. GONZALEZ
Secretary

NOTE: At lower right of all three pages is written
"GMC-84711"; deletion on third page is by hand.

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January Sixth, 1938

Ethyl Gasoline Corporation,
405 Lexington Avenue,
New York City.

Gentlemen:

Financing Agreement

In connection with the execution of the Manufacturing Service, Lease and License Agreements dated as of January 1, 1938, this Company agrees to purchase at par, First Lien Bonds of Ethyl Gasoline Corporation in an amount equal to—

- (a) One-third of the working capital required by Ethyl Gasoline Corporation for the Deepwater operations as set forth in said agreements dated January 1, 1938; provided, General Motors Corporation and Standard Oil Company (New Jersey) shall each purchase said bonds in an amount equal to one-third of the said working capital.
- (b) \$500,000; provided General Motors Corporation and Standard Oil Company (New Jersey) shall each purchase said bonds in an amount equal to one-half of the balance of cost of construction of the No. 5 Lead Plant at Baton Rouge, Louisiana, referred to in said Manufacturing Service Agreement.
- (c) Ten per cent (10%) of any additional capital required by Ethyl Gasoline Corporation during the period of said Lease dated January 1, 1938, for the manufacture of tetraethyl lead; provided, General

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Motors Corporation and Standard Oil Company (New Jersey) shall each purchase said bonds in an amount equal to forty-five per cent (45%) of said additional capital.

- (d) Twenty per cent (20%) of any additional capital required by Ethyl Gasoline Corporation during the period of said Lease dated January 1, 1938 for the manufacture of anti-knock compounds (as defined in said License Agreement dated January 1, 1938) other than tetraethyl lead; provided, General Motors Corporation and Standard Oil Company (New Jersey) shall each purchase said bonds in an amount equal to forty per cent (40%) of said additional capital.

The purchase of said bonds by this Company shall be subject to the following terms and conditions:

1. Said bonds shall be a first lien on all fixed assets of Ethyl Gasoline Corporation.
2. Said bonds shall bear interest at the rate of seven per cent (7%) per annum, payable semi-annually and may be redeemed by Ethyl Gasoline Corporation pro rata on any interest date at par plus accrued interest.
3. Ethyl Gasoline Corporation shall agree to purchase said bonds from this Company at par plus accrued interest upon the termination of the said Lease of January 1, 1938.
4. The total amount of bonds purchased hereunder by this Company shall not exceed the sum of Six Million Dollars (\$6,000,000).

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Acceptance of the terms and conditions of this letter
may be indicated by execution of the attached copy.

Very truly yours,

E. I. DU PONT DE NEMOURS & COMPANY
By *E. G. Robinson*
General Manager

Accepted:

ETHYL GASOLINE CORPORATION
By *E. W. Webb*
President

NOTE: At lower right is written "GMC-847d" followed
by a stamp "Form approved, Legal Department . . . Asst.
Director"; in the space provided in this stamp is written the
name of H. C. Haskell; above this stamp are written the
initials "E.A.R."; beneath are written two illegible sets of
initials; at bottom of page is written "Finance"; italics
indicate handwriting.

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GENERAL MOTORS CORPORATION.

INTER-ORGANIZATION LETTERS ONLY

TO Mr. Donaldson Brown, Vice-Chairman. ADDRESS

FROM George Russell. ADDRESS

DATE January 12, 1938.

SUBJECT REQUEST FOR ADDITIONAL INVESTMENT
IN ETHYL GASOLINE CORPORATION

The following summarizes the discussions which took place in Mr. Webb's office on January 11, 1938. This meeting included Messrs. Howard, Russell, and Fisher of the Standard Oil Company (New Jersey), Messrs. Robinson and Stecher of E. I. du Pont de Nemours & Company, Inc., and the undersigned. Mr. Webb called the meeting in order to discuss a new development in the gasoline business on which information had just become available. The group was informed that the Standard Oil Company (New Jersey) has knowledge of the fact that one of its leading competitors in the gasoline field, "the Sun Oil Company, owns a one-third interest in the Houdry cracking process, and together with Socony-Vacuum Company, which also owns a one-third interest, has developed this process to a point where it is commercially practicable. The remaining one-third interest in the process is held by Mr. Houdry and associates in France."

"Briefly, the Houdry cracking process will produce a gasoline with an octane count of 76 to 78, approximately the same test as the present "Ethyl" which sells at a premium of 2¢ per gallon. However, this new gasoline is to be

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competitive with the present "regular" gasoline which contains a smaller amount of lead than premium gasoline and has an octane count of only 71 to 73. The Houdry process also results in a higher yield of gasoline and a lower yield of heavy oils, an advantage which will interest the oil companies since the supply of heavy oils has been excessive for many years.

The actual cost of cracking under this new process will be approximately the same as the old Standard Oil Company cracking process. However, the high initial cost of installation may retard or prevent its immediate adoption by the oil companies. It was also significant that it would require a period of years before the total industry could make a complete change over. It is estimated that in order to change over the Sun Oil Company's plants a total expenditure of approximately \$20,000,000 will be required. "The Sun Oil Company has already undertaken this expenditure and its plants will be completely changed over by the end of 1938, so that it will be able to introduce a gasoline with an increase of four to five octane numbers by the beginning of 1939. Socony-Vacuum Company has already started a \$35,000,000 Houdry process program which will change over only about one-quarter of its facilities. This will only permit Socony-Vacuum Company to increase its octane count about two numbers. It is further estimated that Socony-Vacuum will be required to spend approximately \$130,000,000 to completely change over its plans. Standard Oil (New Jersey) people estimated that it would cost them approximately \$100,000,000 to install the new Houdry process.

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In order to meet the forthcoming Sun Oil and the Socony competition resulting from the introduction of the new higher octane count gasoline, the oil companies will either

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be required to make the necessary capital expenditures for the installation of the Houdry process, or obtain the same result by increasing the lead content of their gasoline. To bring "regular" gasoline up to a 76 to 78 octane test, approximately double the present lead content would be required. If the latter plan were followed, a considerable increase in the Ethyl Gasoline plant capacity would be required since it appears that the present construction program will only take care of the current increasing demand." In 1937, Ethyl Gasoline's volume was 66,000,000 pounds of tetraethyl lead, an increase of about 30% over 1936. It is estimated that the normal output for 1938 (operating five lead plants twelve months and one new plant for nine months) is not in excess of 78,000,000 pounds and that the maximum volume (operating the plants seven days a week) is about 85,000,000 pounds. If a 30% increase in volume were obtained in 1938, total sales would approximate 85,000,000 pounds, so that the present plant facilities would only produce the 1938 requirements.

Since the Standard Oil Company (New Jersey) serves the same territory as the Sun Oil Company and also competes with Socony-Vacuum Company, it will be threatened with a loss of competitive position when the new higher test gasoline is introduced. Consequently, Standard Oil Company (New Jersey) is strongly of the opinion that additional lead facilities should be built at Baton Rouge immediately. It was brought out that if Standard Oil (New Jersey) were to raise its octane count to the level of the new Sun Oil gasoline, it would increase its present takings from Ethyl by 130%, which is equivalent to the output of one new lead plant. The suggested immediate expansion program would require the expenditure by Ethyl of ~~not~~ in excess of \$12,500,000, and would bring the maximum lead capacity up to about 120,000,000 pounds annually. The im-

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- mediate capital outlay for plant facilities to be completed around November or December, 1938, will be as follows:

<u>Expenditures at Baton Rouge</u>	<u>Estimated Capital Required</u>
Two Lead Plants	\$ 4,000,000
Two Sodium Units	4,000,000
Two Ethyl Chloride Plants (du Pont Process)	1,500,000
Power Facilities*	1,500,000
Additional Working Capital	1,000,000
 Total	 \$12,000,000
 <u>Expenditures at Kure Beach, North Carolina</u>	
Expansion of Ethyl-Dow Dibromide Facilities (Ethyl's Proportion)	500,000
 Total Estimated Capital Required	 \$12,500,000

*On a loan basis to local power company.

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It is possible that the above estimates may be reduced by about \$1,000,000, so that the total expenditure will be reduced to \$11,500,000. The expenditures will be financed through the issuance of 7% bonds to be subscribed as follows:

<u>Subscriber</u>	<u>Subscriptions to Bonds</u>	
	<u>Amount</u>	<u>% of Total</u>
General Motors Corporation	\$5,650,000	45.2%
Standard Oil Company (New Jersey)	5,650,000	45.2
E. I. du Pont de Nemours & Company, Inc.	1,200,000	9.6
 Total	 \$12,500,000	 100.0%

The above figures do not include any participation by the du Pont Company in the cost of the expansion of the Ethyl-Dow Company dibromide facilities at Kure Beach, North

Carolina (in which Ethyl Gasoline has a 50% interest). Mr. Howard of Standard Oil Company (New Jersey) suggested that since the du Pont Company shares in the Ethyl-Dow profits, we might consider asking them to contribute towards the cost of the added Ethyl-Dow facilities. It will be recalled that no provision was made in the agreement between Ethyl Gasoline Corporation and E. I. du Pont de Nemours & Company, Inc. for such participation.

In addition to the above immediate expenditures, additional facilities may be required at an early date. However, it was felt that after the proposed projects have been started, a review should be made to determine when such facilities will be necessary. It was the feeling of the Standard Oil Company representatives that it would be better to overbuild than to underbuild and that because of the uncertainties surrounding the new venture, a higher rate of depreciation should be used than is currently applied.

Total General Motors Investment In Ethyl Gasoline Corporation

If General Motors Corporation subscribes \$5,650,000 to the proposed expansion program, its investment in Ethyl Gasoline Corporation would be increased to \$13,800,000 by the end of 1938, made up as follows:

General Motors Investment in Ethyl Gasoline Corporation

General Motors original investment in capital stock, plus equity in undivided profits from inception through December 31, 1938.	\$3,459,000
Advances required in connection with Ethyl Gasoline taking over manufacturing facilities and necessary expansion:	
Advanced through January 3, 1938	\$4,066,000
Estimated advances during 1938 for which General Motors is committed	625,000
General Motors Investment before Proposed Expansion	<u>\$8,150,000</u>
Proposed Expansion (described herein)	<u>5,650,000</u>
Total General Motors Investment Including Proposed Expansion	<u><u>\$13,800,000</u></u>

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Future Pricing Policy of Ethyl Gasoline Corporation

The undersigned raised the question as to whether Ethyl Gasoline Corporation, as a matter of policy, would reduce the price of tetraethyl lead in the event that the oil companies increase their purchases. It was the feeling of Mr. Webb and Mr. Howard that no reduction should be made in the price of lead during the year 1938. For a number of years it has been the policy of Ethyl Gasoline Corporation to decrease the price at the beginning of each year.

There is attached a copy of a memorandum prepared by Mr. Webb which also summarizes the discussion.

George Russell
George Russell,
Treasurer's Office.

GR:LFD

Att.

NOTE: Across top of first page is written "Ethyl-Org.-Operating Policy-Future Prog."; at upper right of second and fourth pages is written the initial "H"; above word "Memorandum" in last sentence is drawn a check mark; quotation marks and marginal line on first page are by hand; italics indicate handwriting.

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK, N. Y.

January 18, 1938.

Mr. Earle W. Webb, President,
Ethyl Gasoline Corporation,
405 Lexington Ave.,
New York, N.Y.

RE: PROGRAM INVOLVING EXPANSION OF PRODUCTION

My dear Mr. Webb:—

Mr. Brown has handed me copy of a memorandum addressed to him by Mr. Russell of Mr. Bradley's staff, the subject of which is a request for additional investment in Ethyl Gasoline Corporation.

The question of investment, it seems to me, is secondary to the development of an adjusted economic picture of the position of the business in view of this new competitive influence. This I believe Mr. Brown has already indicated to you as his thinking. It certainly is mine. What I am driving at is, that we now are told that a process is available—no more costly than the present process—that will move the octane rating up to 76 to 78, as compared with the present standard of 71 to 73, and at the same time will increase the yield of gasoline as compared with heavy oil.

All that being the case, what is the comparison between a reasonable return on the capital necessary to install the new apparatus with the essential depreciation incident to same and the amount that might be absorbed in cost of sales through the use of additional lead. And assuming that one must necessarily balance the other, or that the cost of tetra-

ethyl lead route should not be any greater, then on that basis what would be the economic picture of Ethyl Gasoline Corporation with the selling price of lead adjusted accordingly? I take it, in view of the fact that the question arises, that the answer must be that it is cheaper to go the lead route or that we have the power to make such a price, and at the same time make a reasonable return on the capital employed. Is that so?

It seems to me also the question arises as to whether we should reduce the price of tetra-ethyl lead to the new competitive base. My reaction is, that we should, but perhaps there are reasons why we should not. I note that this question arose in the discussion, and the opinion at the moment seems to be, that we should not. I would like to hear a discussion of that point.

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It seems to me that we ought to do everything we can to discourage the investment of these large amounts of money, and that it will be best to take a position right now, which would indicate that that was our policy. Certainly with the fact known that a better fuel is in the offing at a standard price, competitors of the Sun Oil Company and Socony Vacuum Company are necessarily forced to take a position immediately. Perhaps the plan is to advise them in advance what we propose to do; or what is possible for us to do even if we do not do it immediately. As to that point, I am not informed.

All I am trying to say in this letter to you is, that I would like to have a complete analysis of how we stand today, looking forward, as compared with yesterday. I realize, of course, that irrespective of what the standard may be through the use of lead, we can always establish a higher standard even at a reduced rate of gain, and on that point I would like to point out, that I personally, as you

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know, have urged a more aggressive policy in moving up the octane rating because it has been perfectly evident for a long time past, that this is the right way to go, from every standpoint.

Also, on this general point it would seem to me the question arises as to whether it would be possible to raise gasoline as produced from the already existing cracking process; move it up to the point now possible through the use of the new process, and have a sufficient leeway in the amount of tetra-ethyl lead that we are using per gallon to make possible a premium fuel, or a fuel applicable to the more refined uses, such as airplane practice, at the same time keep within 3 ccc, the present limit. The question that comes into my mind is, in view of the economic justification of higher octane ratings and the limitation in the dosage of lead, is it reasonable to suppose that all Companies will be forced into the new process, sooner or later, in order to get a higher base point on which lead is to be superimposed.

I should be very glad to hear from you on the above as to what I might refer to as the operating influences of the new development, as distinguished from the purely financial phase.

Very truly yours,

Alfred P. Sloan, Jr.

APSJr./K

c/c Messrs. Lammot du Pont

Donaldson Brown

NOTE: At lower right of both pages is written "GMC-579a"; beneath date line is stamped "Received Jan 10, 1938, Lammot du Pont"; marginal lines are by hand; diagonally across both pages is stamped "Copy"; letterhead on second page is upside down and at bottom; the name of Lammot du Pont at bottom of second page is checked by hand; italics indicate handwriting.

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Letterhead of
E. I. DU PONT DE NEMOURS & COMPANY
ORGANIC CHEMICALS DEPARTMENT

January 31, 1938.

MR. LAMMOT du PONT, PRESIDENT

I am returning herewith the letter from Mr. Sloan to Mr. Webb of January 18th with regard to the expansion of Lead facilities at Baton Rouge.

In answer to your question, I do not know how long this new process has been known to the Ethyl Gasoline Corporation or to its stockholders. However, in the conversation that we had with Mr. Howard and Mr. Webb a few days ago in which they painted the picture as to the need for this increased capacity. Mr. Howard implied that they had had this prospective increased demand for some time and had been unwilling to say anything about it until they had concluded their agreement with us. Specifically he said that we would have to accept the great rush that we were now in to get the capacity done in time as doing penance for our delaying in getting our agreement completed. Just what this remark meant or what impression he was trying to convey, it was a little hard for me to understand.

There is one point in Mr. Sloan's letter, however, on which it seems to me he is not quite clear. The fact that Sun and Socony have made plans to install certain equipment to produce gasoline by the new process does not necessarily mean, as I see it, that we have to reduce the price of Lead to prevent other people from taking a similar step. This is particularly true as regards Sun, who have always opposed Lead and have never used it. Although I do not

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have any detailed figures it might well be that the other concerns could afford and would prefer to use increased quantities of Lead if the standard quality of gasoline is forced upward rather than invest the large amounts of money required to make fundamental changes in their cracking process.

E. G. Robinson

E. G. ROBINSON,
GENERAL MANAGER.

EGR:EM

NOTE: Across top of page is written "GM-Ethyl Gasoline Corp."; to right of date line is stamped "Received Feb 2, 1938, Lammot du Pont"; from line in left margin a line is drawn upward to handwritten initials "A.P.S."; underlining and marginal line are by hand; italics indicate handwriting.

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To: Policy Committee

FROM: Donaldson Brown

SUBJECT: INVESTMENT IN ETHYL GASOLINE CORPORATION

July 12, 1939.

Since the end of 1937, Ethyl Gasoline Corporation (owned 50% by General Motors Corporation and 50% by Standard Oil Co. of N.J.) has taken two steps which have materially affected its operations and also the capital requirements of the business. These are:

- (1) The negotiation of a seven year contract with E. I. du Pont de Nemours & Co. which provided that, effective January 1, 1938, the Ethyl Company would engage in the manufacture as well as the sale of tetraethyl lead, instead of buying its tetraethyl lead requirements from the du Pont Company under an annual contract. Since the manufacturing operations of the business required the major capital investment, this has increased considerably the company's capital requirements. Under the agreement, the actual manufacturing operations are carried on by the du Pont Company for the account and risk of the Ethyl Company. This contract was discussed by your Committee at its January 3, 1938 meeting when the contract was being made; and
- (2) The sale of the Ethyl Company's export business to a new company, in which General Motors and Standard Oil (N.J.) have approximately a 50%

interest, the balance being held by other oil marketers operating in the export field.

In view of the very considerable increase in the investment required by General Motors in the Ethyl Company and the change in the position of the Ethyl Company with respect to foreign business, this report is being submitted to your Committee as a matter of information.

Investment Required to Engage in and Expand Manufacturing Activities

From the inception of Ethyl Gasoline Corp., in 1924, through 1937, the du Pont Company supplied the Ethyl Company with its tetraethyl lead requirements, carrying on such manufacture at its plants located at Deepwater Point, New Jersey. Tetraethyl lead was supplied under annual contracts which specified a fixed price per pound for the lead for the ensuing year. The basic patents covering tetraethyl lead, which expire at the end of 1947, are held by the Ethyl Company under an exclusive license agreement with General Motors; but the du Pont Company developed manufacturing processes and acquired an operating technique over this period which it would be difficult to duplicate.

—2—

Tetraethyl lead volume increased from a nominal volume in the early years to a volume of 66,000,000 pounds in 1937. (In 1938, the volume was 71,000,000 pounds.) This was in excess of the volume (53,000,000 pounds) that could be safely handled at the Deepwater plants, and it was considered advisable to construct additional plant facilities in Baton Rouge, La., where it was estimated that the manufacture of the additional lead requirements could be carried on favorably from a cost standpoint.

The management of the Ethyl Company also considered it advisable to arrange an operating agreement with the

du Pont Company covering the manufacture of tetraethyl lead over a longer period than the year to year arrangement then in effect. Consequently, an agreement was worked out between the two companies whereby the Ethyl Company would take over the responsibility of furnishing the capital required for additional plant capacity and the du Pont Company, for a period of seven years beginning January 1, 1938, would carry on the actual manufacturing operations for the account and risk of the Ethyl Company.

During the negotiation of the agreement, the du Pont Company stated that its billing prices for tetraethyl lead, from year to year, had been predicated on the basis of the du Pont Company enjoying a manufacturing profit approximately equal to one-half the total profits of the Ethyl Company operating as a selling company. In other words, the du Pont Company assumed that the manufacturing profit should approximate one-third of the total combined profits resulting from the manufacture and sale of tetraethyl lead. It was therefore agreed that the compensation to the du Pont Company should be based upon the manufacturing profits, which, for this purpose, were defined as one-third of the total profits to be derived from the manufacture, purchase and sale of tetraethyl lead and any other anti-knock compounds and the manufacture of materials composing the same. The balance, or two-thirds of the total manufacturing and selling profits, is considered applicable to selling operations.

Since the du Pont Company was turning over its Deep-water plants on a nominal rental basis, it was agreed that the entire manufacturing profits on such volume should accrue to the du Pont Company. Manufacturing profits on volume provided by additional capacities in the Baton Rouge plants were to be split between the Ethyl Company

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and the du Pont Company in line with the capital investment provided by each company. Under the agreement the compensation to the du Pont Company is equivalent to the entire amount of the gross manufacturing profits of the Ethyl Company derived from the manufacture, purchase and sale of tetraethyl lead and/or mixtures thereof with other substances up to an aggregate amount of 53,000,000 pounds of total tetraethyl lead content, representing the basic capacity of the Deepwater plants, plus 30% of gross manufacturing profits from any additional volume. This means that with a volume of 66,000,000 pounds (actual 1937 rate) the du Pont Company would receive 86% of total manufacturing profits. On the 1938 volume of 71,000,000 pounds, 82% of the total manufacturing profits would be paid to the du Pont Company. If the Baton Rouge and Deepwater plants were all running at capacity of about 120,000,000 pounds, the du Pont Company would receive 61% of total manufacturing profits. In addition, the du Pont Company receives a portion of the dividends received by the Ethyl Company on the common stock of the Ethyl-Dow Company, which portion may not exceed a maximum of 16 $\frac{2}{3}$ % in any year.

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If, in any two successive years, the compensation under this agreement proved to be less than 7% on the gross capital invested by the du Pont Company in its Deepwater plants, the Ethyl Company would be obliged to guarantee such return for the balance of the contract period, or the agreement and lease would be subject to termination. In addition, the Ethyl Company is required to pay the du Pont Company in each year a 7% return on the Deepwater service facilities investment.

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The royalty agreement between General Motors Corporation and the Ethyl Company was not affected by the manufacturing agreement. Under this agreement, which runs with the patents that expire in 1947, there is payable to General Motors, as royalty, 25% of the net selling profits on the sale of anti-knock compounds covered by the patents, less 22½% on capital employed in the selling operations. The arrangement with the du Pont Company, by fixing manufacturing profits at one-third of the total profits, thereby determines the selling profits upon which the royalty is based.

In order to provide for the cost of the new Baton Rouge plants together with the working capital for all of the plants, the Ethyl Company has secured additional capital totalling \$20,400,000 (including \$300,000 for which a call has not yet been made) from its stockholders and the du Pont Company. With reference to the new plants at Baton Rouge, it was necessary for the management of the Ethyl Company to take into account two factors: (1) the normal increase based upon the trend of consumption of tetraethyl lead during recent years; and (2) the effect of the development of the Houdry cracking process. The Houdry cracking process, which has been developed commercially by Sun Oil Co. and Socony-Vacuum Oil Co., will permit these two companies to produce a gasoline which will have as high an octane count as the premium Ethyl gasoline but which will be competitive in price with the present "regular" gasoline. In order for other oil companies to meet the competition of this high test gasoline resulting from the use of the Houdry process, they will be required to raise the octane count of their "regular" gasoline either by approximately doubling the present lead content or by the installation of the Houdry process in their own plants. In view of the sizable capital expenditures and the length of time required

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to install the Houdry process, the Ethyl Company, in its expansion program, made allowance for the possible increased demand for tetraethyl lead if the oil companies other than Sun and Socony-Vacuum find it necessary to increase the lead content of their "regular" gasoline.

There follows a tabulation showing the amounts supplied by General Motors, Standard Oil (N.J.) and the du Pont Company. In general, the amount of capital furnished by the du Pont Company reflects the proportion of profit which they will derive from the additional facilities.

Purpose of Funds	Funds Provided By:			
	General Motors	Standard Oil (N.J.)	du Pont Company	Total
Working Capital	\$1,550,000	\$1,550,000	\$1,102,000	\$ 4,202,000
New Construction	7,206,000	7,206,000	1,786,000	16,198,000
Total	<u>\$8,756,000</u>	<u>\$8,756,000</u>	<u>\$2,888,000</u>	<u>\$20,400,000*</u>

* Includes \$300,000 for which a call has not yet been made.

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Under the financing agreement, it was provided that the above capital requirements should be obtained by the issuance of first mortgage, seven year, 7% bonds, callable on any interest date at par. To date, however, the stockholders and the du Pont Company have accepted 7% promissory notes with the understanding that these notes are to be converted into 7% bonds described above when requested.

Including the above amounts, General Motors and Standard Oil each had an investment in the Ethyl Company amounting to \$13,534,000 (including capital stock and earnings reinvested) as of June 30, 1939. The du Pont Company investment is represented solely by the \$2,888,000 of interest obligations.

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Formation of New Overseas Company

As of May 1, 1939, a new overseas company, Associated Ethyl Co. Ltd. (a British company) was organized by the Ethyl Company in order to extend the manufacture and sale of tetraethyl fluid in the principal markets of the world outside of the United States. General Motors and Standard Oil (N.J.) together hold an interest of approximately 50% in Associated Ethyl, with the remaining 50% being held by certain large oil producers whose good will and distribution facilities should materially increase the sale of ethyl fluid in overseas markets, although not in the proportions enjoyed in this country. To a large extent, the ethyl fluid demand abroad is today centered in the military demands of England, France, Germany and Italy. The oil producers who are partners with General Motors and Standard Oil (N.J.) in the overseas business are: Socony-Vacuum, Texas Corp., Standard Oil (Calif.), Anglo-Saxon (Shell) and Anglo-Iranian.

Prior to May 1, 1939, the Ethyl Export Company (a wholly owned subsidiary of the Ethyl Company) marketed ethyl fluid in the overseas markets. The principal foreign market was the British Isles, which was handled through a subsidiary, British Ethyl company. In addition, Ethyl Export Company held a 50% interest in a German Ethyl company, the other 50% being held by I.G. Farben. Negotiations were also in process for the establishment of French operations. All of the overseas business has been sold to Associated Ethyl (a British company) for approximately \$1,200,000, which is \$1,000,000 in excess of the net worth of the assets turned over to the new company. The proceeds of this sale accrued to the stockholders of the Ethyl Gasoline Corporation.

Associated Ethyl was formed to manufacture and sell ethyl fluid in all markets except North America and those in which local companies affiliated with Associated Ethyl will operate. Under the terms of the agreement, the interests of the stockholders in the equity securities of Associated Ethyl were allocated in proportion to their gasoline business in the export area during the year 1937, with General Motors getting the same interest as Standard Oil (N.J.). The interest of

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the stockholders in the equity securities of Associated Ethyl is as follows:

Company	% of Total.	Associated Ethyl Equity Securities				Total Equivalent Dollars
		Class A	Class B	Sterling		
General Motors	24.36	4,871	609	5,480	25,653	\$
Standard Oil (N.J.)	24.36	4,871	609	5,480	25,653	
Socony-Vacuum	6.77	1,353	169	1,522	7,125	
Texas Corp.	4.99	998	125	1,123	5,257	
Standard Oil (Calif.)	1.89	379	47	426	1,994	
Total above	62.37	12,472	1,559	14,031	65,682	
Anglo-Saxon (Shell)	25.30	5,061	633	5,694	26,655	
Anglo-Iranian	12.33	2,467	308	2,775	12,991	
Total	100.00	20,000	2,500	22,500	105,328	

Associated Ethyl also has issued a Class C stock to stockholders other than Standard Oil (N.J.) and General Motors, in the amount of the selling price of the Ethyl Export Company, approximately \$1,200,000. After a 6% cumulative dividend has been paid on the Class A stock, a portion of the annual profits will be used to redeem the Class C stock until the total amount has been retired. The balance of the earnings, prior to 1943, will accrue to the

Class A stockholders. Beginning in 1943, the profits of the company will accrue largely to the Class B stockholders, to be distributed to the oil companies in proportion to their purchases of tetraethyl lead for the export market. Provision is made, however, for General Motors' participation to remain fixed at its Class A position, at present 24.36%, so that General Motors' interest in both A and B stocks will remain fixed at this percentage and the fluctuation in the ownership of Class B stock by the oil companies will therefore not affect the General Motors' interest in profits. In order to maintain this 24.36% interest, however, General Motors will be required to subscribe to its pro rata share of any additional stock offerings required on account of new manufacturing plants abroad (such plants are now provided for in England, Germany, France and Italy). In the agreement, provision was also made for the protection of General Motors in the event of any price cutting by Associated Ethyl.

Prior to the sale of the overseas business, General Motors participated in 50% of the net profits of the foreign and domestic Ethyl business. The new plan has not altered General Motors' domestic position but has reduced its foreign participation to approximately one quarter of the foreign net profits. General Motors has therefore given up one-half of its interest in foreign operations for a one-half interest in the \$1,200,000 selling price of the Ethyl Export Co. which corresponds with the change in the position of the Standard Oil Co. (N.J.).

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General Motors' interests, as well as the interests of the American oil companies, in the overseas ethyl business are held through ownership of stock of the Forak Company, an American holding company. This holding company was formed in order that the foreign tax credit on divi-

dends which it receives from foreign investments might be secured.

In connection with the formation of Associated Ethyl, General Motors subscribed for its proportion, 24.36% of the Class A and Class B stock through the Forak Co. This required an investment of £5,480, or \$26,000. In addition, General Motors was required to subscribe through Forak Company for its pro rata share of stock of three French companies, which required an investment of \$73,000.

At the present time, Associated Ethyl proposes the formation of an Italian Ethyl company with a capital of 15,000,000 lire. The capital of this new company will be provided 50% through local subscription and 50% by Associated Ethyl. To secure the required capital for this new venture, Associated Ethyl will issue £81,000 of Class A stock to its stockholders. General Motors' proportion will amount to £20,000, or approximately \$95,000 (being the equivalent of 1,827,000 lire). After the above investment has been made, General Motors will have a total of \$194,000 invested in overseas ethyl business.

Summary

On the basis of present commitments, General Motors Corporation will have invested a total of \$13,728,000 in the Ethyl Company and foreign ethyl interests. Of this amount, \$13,534,000 represents investment in domestic business through the Ethyl Company (of which \$8,756,000 is at present secured by 7% notes and the balance of \$4,778,000 by capital stock and reinvested earnings) and the balance of \$194,000 is invested in the foreign ethyl business.

Respectfully submitted,

DONALDSON BROWN,
Vice-Chairman.

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GENERAL MOTORS CORPORATION
INTER-ORGANIZATION LETTERS ONLY

To Mr. Albert Bradley, Vice-President.

ADDRESS

From F. G. Donner.

ADDRESS

Subject ETHYL-DU PONT PROFIT SHARING

ARRANGEMENT

DATE July 31, 1939.

Verbal

In accordance with your request; we have summarized briefly the basis of the contractual arrangement between Ethyl Gasoline Corporation and E. I. du Pont de Nemours & Co., under which the du Pont Company receives compensation on a profit sharing basis for carrying on the manufacturing activities for the Ethyl Company.

You will recall that the manufacturing service agreement was arranged between the Ethyl Company and the du Pont Company to provide for a longer term agreement between the two companies under which additional manufacturing facilities at Baton Rouge would be constructed and operated. The agreement as finally adopted provided that du Pont would lease its existing lead plants at Deepwater Point, N. J. to Ethyl at a nominal rental and would operate these plants and the new plants at Baton Rouge for the account and risk of Ethyl.

In the preliminary negotiations, the du Pont Company stated that its billing prices, from year to year, had been predicated on the basis of du Pont enjoying a manufacturing profit equal to approximately one-half the total profits being enjoyed by the Ethyl Company (operating as a selling

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company). In other words, the du Pont Company had assumed that the manufacturing profit should approximate one-third of the total profits resulting from the manufacture and sale of tetraethyl lead.

In the negotiation of the agreement between Ethyl and du Pont, it was taken as a basic assumption that du Pont should receive the same proportion of the total profits arising from the operation of the Deepwater Point plants as they received in the past, (that is, one-third the total profits) and, in addition, a smaller portion of the profits accruing from the additional volume made possible by the new plants constructed at Baton Rouge.

To effect the foregoing, it was provided in the contract that manufacturing profits were to be calculated as one-third of the total profits to be derived from the manufacture, purchase and sale of tetraethyl lead and other anti-knock compounds and the manufacture of materials composing the same. The balance, or two-thirds of the total profits, were to be considered as applicable to the selling operations (this is important in calculating our royalties, which are based on selling profits).

Since the du Pont Company was turning over its Deepwater plants on a nominal rental basis, it was agreed that the entire manufacturing profits applicable to tetraethyl lead or mixtures thereof produced at the Deepwater plants (fixed in the agreement as being equivalent to 53,000,000 pounds of tetraethyl lead) should accrue to the du Pont Company. The manufacturing profits applicable to the tetraethyl lead

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volumne provided by additional capacities in the Baton Rouge plants were to be split with 30% of the total being paid to the du Pont Company and the balance, or 70% of the manu-

facturing profits on this volume, accruing to Ethyl Company. Du Pont was also to receive 60% of the manufacturing profits on other anti-knock compounds other than tetraethyl lead or mixtures thereof. In addition to its portion of the manufacturing profit, it was agreed that the du Pont Company would receive a portion of the dividends received by the Ethyl Company on the Common stock of Ethyl-Dow Company, which portion may not exceed a maximum of 16 $\frac{2}{3}$ % in any year.

The total profits are distributed between the Deepwater Point and Baton Rouge plants on the basis of volume. Thus, at the 1938 total volume of approximately 71,000,000 pounds of tetraethyl lead, 53/71 of the total profits would be considered applicable to the Deepwater plants and the balance, 18/71 of the total profit, would be applicable to the Baton Rouge plants. As a result, for 1938 du Pont received approximately 82% of the total manufacturing profits, as shown in the following calculation. Since final figures for 1938 are not available, the total manufacturing profits and compensation payable to du Pont shown are approximate and are used for illustrative purposes only.

	<u>Deepwater Plants</u>	<u>Baton Rouge Plants</u>	<u>Total</u>
Volume of Tetraethyl Lead			
Amount	53,000,000	18,000,000	71,000,000
As % of Total (1)	74.6%	25.4%	100.0%
du Pont Proportion of Total Manufacturing Profits Received as Compensation.			
Per Contract (2)	100%	30%	82.2%
Weighted by Volume (3) = (1) x (2)	74.6%	7.6%	82.2%
Total Manufacturing Profits (4)			\$6,600,000
du Pont Compensation (5) - (3)x(4)			\$4,425,000*

* In addition to compensation based on manufacturing profits, du Pont received approximately \$128,000 as its portion of the dividends of \$935,000 received from Ethyl-Dow.

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The royalty agreement between General Motors Corporation and the Ethyl Company was not affected by the manufacturing agreement. Under this agreement, which runs with the patents that expire in 1947, there is payable to General Motors, as royalty, 25% of the net selling profits on the sale of anti-knock compounds covered by the patents, less 22½% on capital employed in the selling operations.

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The arrangement with the du Pont Company, by fixing manufacturing profits at one-third of the total profits, thereby determines the selling profits upon which the royalty is based.

F G Donner

F. G. Donner
General Asst. Treasurer.

FGD:LFD

NOTE: Across top of first page is written "Ethyl-Org.-Reorg.-Mfg. Activities—Mfg. Service Agreement" (words "Org." and "Reorg." are deleted by hand); at first page upper right the initial "R" is written; above letterhead are written illegible initials; to right of address is stamped "Received Aug. 1, 1939, Albert Bradley"; underlining in first line is by hand; italics indicate handwriting.

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THIS AGREEMENT made as of the 1st day of January, 1945, between ETHYL CORPORATION, a corporation of the State of Delaware, hereinafter called ETHYL, and E. I. DU PONT DE NEMOURS AND COMPANY, a corporation of the State of Delaware, hereinafter called DU PONT.

WITNESSETH:

WHEREAS, as of the 1st of January, 1938, the parties hereto entered into certain agreements, known to each other as "Agreement of Lease", "License Agreement", and "Manufacturing Service Agreement", respectively; and

WHEREAS, said agreements have been modified and supplemented from time to time; and

WHEREAS, under date of April 1, 1941, the parties hereto entered into a certain agreement with respect to financing additional capital of ETHYL, which agreement is hereby designated "Financing Agreement"; and

WHEREAS, the said parties hereto desire to supplement further and to extend all of said agreements upon the terms and conditions hereinafter set forth;

Now, THEREFORE, in consideration of the premises, said parties have agreed as follows:

1. Article 1 of said Agreement of Lease is hereby amended by deleting the following language:

"LESSOR does hereby let and rent to LESSEE and LESSEE hereby hires from LESSOR for the period of seven (7) years commencing on the 1st day of January 1938 and ending on the 31st day of December 1944, which term of lease, however, shall not in any event extend beyond the period of the Manufacturing Service Agreement dated as of January 1, 1938",

~~and substituting in lieu thereof the following language:~~

"LESSOR does hereby let and rent to LESSEE and LESSEE hereby hires from LESSOR for the period of ten (10) years commencing on the 1st day of January 1938 and ending on the 31st day of December 1947, which term of lease, however, shall not in any event extend beyond the period of the Manufacturing Service Agreement dated as of January 1, 1938, as amended".

2. Article II-D of said License Agreement is hereby amended by inserting the words "(except those in reference to sodium)" after the words "Manufacturing Service Agreement" on line twelve of said article.
3. Article II-D of said License Agreement is hereby further amended by deleting the date "December 31, 1944" in the last paragraph of said article, and inserting in lieu thereof the date "December 31, 1947".
4. Article II-E(1) of said License Agreement is hereby amended by deleting the date "January 1, 1948", and inserting in lieu thereof the date "January 1, 1949".

5. Article II-E(1) of said License Agreement is hereby further amended by deleting from said article the following paragraph:

"For the year 1948, the price for tetraethyl lead to be paid by ETHYL COMPANY to DU PONT COMPANY shall be such as to yield a net profit per pound to the DU PONT COMPANY, before income and profit taxes, equal to the yearly average profit per pound made by DU PONT COMPANY during the three preceding years."

6. Article XVII of said Manufacturing Service Agreement is hereby amended by deleting "seven (7) years", and substituting in lieu thereof "ten (10) years".

7. It is understood and agreed by the parties hereto that said Financing Agreement of April 1, 1941, shall cease and terminate with said Manufacturing Service Agreement and said Agreement of Lease, as herein amended.

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8. It is understood that except as herein expressly amended and extended all the provisions of said Agreement of Lease, said License Agreement, said Manufacturing Service Agreement and said Financing Agreement, as amended, shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be signed and their respective seals to be hereunto affixed in duplicate by the officers or represent-

atives thereunto duly authorized this 16th day of November,
1943.

ETHYL CORPORATION
By. *E. W. Webb*, President

ATTEST:

J. C. Gonzalez

E. I. DU PONT DE NEMOURS AND COMPANY

By. *E. G. Robinson*

General Manager
Organic Chemicals Department

ATTEST:

W. F. Raskob
Secretary

NOTE: At lower right of all three pages is written "GMC-847"; in left margin of last page opposite signatures is stamped "Form approved, Legal Department . . . Director"; in space provided in this stamp is written the name of H. C. Haskell; above this stamp are written three sets of illegible initials; italics indicate handwriting.

To: Board of Directors
From: Special Committee—Ethyl Study
~~Subject:~~ LEGAL ASPECTS OF GENERAL MOTORS CORPORATION INVESTMENT IN ETHYL CORPORATION

May 28, 1947.

Your Board at its meeting on May 5, 1947 authorized, by resolution, the Chairman to appoint a Special Committee to study certain phases of the General Motors Corporation-Ethyl Corporation relationship. The resolution follows:

"RESOLVED that a Committee be, and the same hereby is, established consisting of four members of the Board of Directors to be appointed by the Chairman to study and report as promptly as possible to this Board on what, if any, legal problems affecting the Corporation, because of its investment in Ethyl Corporation, may arise out of the entry of E. I. du Pont de Nemours & Company into the manufacture and distribution of tetraethyl lead after December 1947, the date at which patent coverage in the manufacture by Ethyl Corporation of tetraethyl lead will expire."

Pursuant to this resolution, the Chairman appointed a Committee of four members consisting of Messrs. Albert Bradley, Chairman, F. G. Donner, E. F. Johnson and C. F. Kettering. The work of your Committee was expedited because of the fact that Ferris Hurd, Esq., of the law firm of Pope & Ballard, Esqs., of Chicago, Illinois had already been retained to study from the legal standpoint the relationship as it would exist after December 31, 1947. Pope & Ballard, Esqs., represented General Motors Acceptance Corporation

in the anti-trust criminal proceedings at South Bend, Indiana and at present represent General Motors Corporation in several pending anti-trust suits.

ANALYSIS OF PROBLEM

The members of this Committee met with Messrs. John Thomas Smith, General Counsel, Henry M. Hogan, Assistant General Counsel, and Ferris Hurd, of Special Counsel in Detroit on May 21, 1947. Each member of the Committee as well as Counsel had been furnished with a narrative outline (copy of which is attached) of the story of Ethyl Corporation and its relationships with General Motors Corporation, Standard Oil Company (New Jersey) and E. I. du Pont de Nemours & Company over the years, and posing certain questions. A preliminary memorandum dealing with some of the possible legal problems was also furnished the Committee and Counsel.

Mr. Hurd reviewed with the Committee the legal situation that will be created by the entry after December 31, 1947 of E. I. du Pont de Nemours &

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Company into the manufacture and distribution of tetraethyl lead. At the conclusion of his review, he was requested to submit a written opinion. It is hoped that this opinion will be received in time for submission to the Board of Directors at its meeting on June 2, 1947.

In summary, Mr. Hurd presented the problem in two broad categories:

(1) COMPLIANCE WITH CLAYTON ACT

The presence of Mr. Sloan after December 31, 1947 on the Board of Directors both of General Motors Corporation, E. I. du Pont de Nemours & Company and of Ethyl Corporation would be a violation of Section 8 of the Clayton Act.

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This section of the Clayton Act, in summary, forbids interlocking directorates of competing companies having a certain capital structure. It would therefore be incumbent upon Mr. Sloan to resign from either the Board of Directors of E. I. du Pont de Nemours & Company or Ethyl Corporation, effective prior to January 1, 1948.

• (2) SHERMAN ANTI TRUST ACT

The Sherman Act, Section 1, constituted the most serious potential legal problem.

This section, in summary, forbids any contract, conspiracy or combinations in restraint of interstate commerce.

Mr. Hurd considered that in the years 1948 or 1949 no serious legal problem would likely arise or exist because of the existence of aggressive competition between E. I. du Pont de Nemours & Company and Ethyl Corporation for the business presently enjoyed by Ethyl Corporation. He felt that it is against the background of the situation as it may exist in 1950 or 1951 or later that the legal problems of the Corporation growing out of its investment in Ethyl Corporation are to be evaluated.

Mr. Hurd considered that in that latter period and assuming that the present stock and director (other than that of Mr. Sloan) relationships of General Motors Corporation, E. I. du Pont de Nemours & Company and Ethyl Corporation continue to exist, the Government might feel justified in bringing a case under the Sherman Act

—3—

if it desired to prosecute such a case. The elements of this case would include the following:

- (1) An identity of price, since it is assumed that the E. I. du Pont de Nemours & Company and the Ethyl Corporation price for tetraethyl lead will normally tend to be identical in view of the commodity-like nature of the product and the lack of distinguishing characteristics that might make non-identical prices economically justifiable.
- (2) A stable customer relationship, since the customers of both E. I. du Pont de Nemours & Company and Ethyl Corporation after the initial years would tend to maintain their relationships with one or the other company, rather than to change from year to year these relationships or to vary the percentage of their requirements bought from each. As a result, there might be the appearance of an allocation of the market in tetraethyl lead.
- (3) Degree of stock ownership of Ethyl Corporation by General Motors Corporation some of whose stock in turn is owned by E. I. du Pont de Nemours & Company and on whose Board of Directors are directors of E. I. du Pont de Nemours & Company.
- (4) Responsibility within General Motors Corporation for Ethyl Corporation as an associate company is under the jurisdiction of the Financial Policy Committee, which consists of nine members of whom three are also directors of E. I. du Pont de Nemours & Company.

In considering the above factors, Mr. Hurd indicated that in his judgment, no one of them was of itself conclusive. He did believe, however, that the stock ownership factor (item (3) above) was perhaps the most significant individual element in the situation. If General Motors Corporation (under the present stock ownership relationship

when there is only one other stockholder) were today to own something less than 50% of the stock of Ethyl Corporation or, if under changed stock ownership relations, the total stockholdings of General Motors Corporation in Ethyl Corporation were less than those of the next higher stockholder, then the Government would probably find greater difficulty in making out a *prima facie* case.

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These conclusions assume, of course, the absence of any agreement between the related parties to fix prices or to do any other act forbidden by the Sherman Act. Mr. Hurd also emphasized that, while the absence of any such illegal agreement would, of course, prevent the defendants from being in fact guilty of any violation of the Sherman Act, it was one thing to be in fact not guilty and another thing to convince a court and a jury that one was not guilty.

To rebut any possible *prima facie* case and to forearm ourselves against it, Mr. Hurd made certain recommendations or suggestions. These recommendations are as follows:

- (1) Retention of all evidence of aggressive competition and active solicitation by Ethyl Corporation for the business in tetraethyl lead.
- (2) A clear record by Ethyl Corporation of the method and manner of its price determination of tetraethyl lead showing, of course, that its determination is the result of a business judgment rather than as a result of any agreement with a competing company.

Your Committee concurs in the recommendations of Mr. Hurd with respect to items 1 and 2.

- (3) Consideration of revamping the jurisdictional setup of Ethyl Corporation in the General Motors Corporation organizational setup.

As this report points out, at the present time Ethyl Corporation comes under the jurisdiction of the Financial Policy Committee. If responsibility for the Ethyl Corporation investment continues under the jurisdiction of the Financial Policy Committee as at present, it would be desirable for the E. I. du Pont de Nemours & Company directors not to participate in any discussions of Ethyl Corporation problems and to withdraw from the meetings of the Committee when there are such discussions. The minutes, of course, of the Financial Policy Committee would record the withdrawal of the E. I. du Pont de Nemours & Company directors.

Another method of treatment might be to transfer Ethyl Corporation to the jurisdiction of the Operations Policy Committee (assumed to contain no du Pont directors) except where any problems of additional investment in Ethyl Corporation may be involved. In the latter event, decision by the Financial Policy Committee would again contemplate non-participation and withdrawal by the directors of E. I. du Pont de Nemours & Company. This method of treatment has the disadvantage of requiring joint or double

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action of these Committees on the very problems (such as new plant investments involved on account of existing products or new products and dividend policies) that will probably most generally require discussion.

Mr. Hurd considered that this Committee factor was more in the nature of a negative protective factor than a positive one and hence of minor importance. In other words, there would be less opportunity for innuendo if Ethyl Corporation did not come under the jurisdiction of a committee which is made up in part of directors of E. I. du Pont de Nemours & Company. Mr. Hurd felt, how-

ever, that one of the two foregoing recommendations ought to be followed:

- (4) The substitution of employees of General Motors Corporation for directors of General Motors Corporation on the Board of Directors of Ethyl Corporation.

Mr. Hurd indicated that this suggestion was of minor importance and would make little difference one way or another.

It is felt that the investigation of the legal problems outlined has progressed to the point that your Board is in a position to act on the points discussed by Mr. Hurd. It is therefore recommended that action be taken to designate the committee to be responsible for the Ethyl investment and to determine the director representation on the Ethyl Board. Mr. Hurd concurs in this position.

While this report covers the problem specifically assigned to this Committee by your Board, it is evident that the broader question of whether or not General Motors Corporation should retain, in whole or in part, its investment in Ethyl Corporation still remains. This question in turn is dependent for its solution upon the answer to the question of whether or not Ethyl Corporation investment should be retained in whole or in part, taking into account its business and profit prospects; and of how disposal of the investment in Ethyl Corporation might best be effected, if disposal of the investment is to be considered. These problems should be considered and dealt with by the committee which has the responsibility in General Motors Corporation for the investment in Ethyl Corporation.

Respectfully submitted,

Albert Bradley, Chairman
F. G. Donner
E. F. Johnson
C. F. Kettering

ETHYL CORPORATION

STATEMENT OF FACTS

Preliminary

The story of Ethyl Corporation and its development throughout the years commencing with Mr. Kettering's original interest in the problem in 1918 involves a great wealth of material and many documents. The narrative outline that follows, however, gives the essentials of the story.

(1) CORPORATE HISTORY

Ethyl Corporation was incorporated as Ethyl Gasoline Corporation under the laws of the State of Delaware under date of August 19, 1924, subsequently, on April 8, 1942, changing its name to Ethyl Corporation.

(2) CORPORATE ACTIVITIES

A. Historical—Discovery of Use of TEL

In 1922, Thomas Midgley, Jr., principal assistant to Mr. Kettering discovered the use of tetraethyl lead as an anti-knock medium. Mr. Kettering had been interested in this problem since 1918 when he first studied this "knocking" phenomenon in connection with his research in the field of automobile engine compression. This discovery of Midgley was apparently the first time that a commercial use had been found for TEL although the compound itself had been previously known to chemistry. On April 15, 1922, Midgley filed an application for a U.S. Patent covering a fuel

—2—

for internal combustion engines containing TEL and other metallic compounds to increase critical compression.

B. Developmental Background of TEL

TEL at this time was made with bromine. The process was commercially unsatisfactory because of the high cost of production.

Standard Oil Company of New Jersey was also studying the anti-knock problem at the same time. There was an exchange between General Motors Corporation and Standard of information on research experience and progress. Upon Midgley's discovery in 1922, Standard concentrated its activities on the problem of production of TEL at a lower cost. In 1923, Dr. C. A. Kraus, retained by Standard to devise a new process of manufacturing, hit upon the production of TEL with chlorine, an inexpensive process and commercially satisfactory. In 1923, Kraus applied for three U.S. patents on variations of this invention.

C. Early Commercialization

On October 6, 1922, E. I. du Pont de Nemours & Company and General Motors Corporation entered into an agreement under which du Pont agreed to supply General Motors with specified quantities of an anti-knock compound to be manufactured pursuant to a formula supplied by General Motors. General Motors Corporation through a subsidiary, General Motors Chemical Company,

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commercialized this anti-knock compound through

license agreements with several gasoline distributors.

D. Formation of Ethyl Corporation

Ethyl Corporation was caused to be formed in 1924 by General Motors Corporation and Standard Oil Company of New Jersey, each making certain contributions.

(1) Contribution of General Motors

General Motors Research Corporation was the owner of the basic Midgley invention for combining TEL with fuel as well as two other Midgley inventions—improvement inventions on the basic patent. These improvement inventions had been developed to combat the lead oxide attack on engine parts. One improvement covered a chloride as an anti-fluxing agent and the other a volatile bromide. Four critical patents seem to be involved and will be enumerated hereafter. However, for the purposes of this memorandum, it is assumed that on December 31, 1947 patent protection on the manufacture of TEL by Ethyl Corporation will expire.

(2) Contribution of Standard

Standard Development Company, a subsidiary of Standard Oil Company of New Jersey, owned itself or held in trust a number of inventions relating to the

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production of TEL including the three processes of Kraus.

1912

(3) Incorporation of Ethyl Corporation

On August 1, 1924, General Motors Corporation and Standard Oil Company entered into an agreement providing for the formation of a Delaware Corporation to be called Ethyl Gasoline Corporation, the stock of which was to be owned in equal shares by General Motors Corporation and Standard Oil. Provision was made in this agreement for the transfer to the new corporation of certain properties and the granting to the new corporation by General Motors and Standard Oil of an exclusive license in the United States and abroad under the relevant inventions. Pursuant to this basic agreement, Ethyl Gasoline Corporation was incorporated, and its stock as issued was issued to General Motors Corporation and Standard Oil in equal shares. In addition, under date of August 28, 1924, the various implementing licensing agreements were executed. These enumerate a great number of patents although, as I have indicated, it seems to me that the four patents enumerated below on the part of General Motors Corporation and the Kraus processes on the part of Standard Oil were the most significant. These agreements have been modified from time to time.

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(4) Operation of Ethyl

Until the end of 1937, Ethyl did not itself manufacture TEL but purchased the com-

pound from licensed suppliers and in turn licensed fuel distributors to make the patented mixture. Du Pont was one of the foremost of these suppliers of Ethyl, manufacturing the compound under the Kraus process. Ethyl's technological activity in relation to TEL manufacture was limited to laboratory research.

Commencing with January 1, 1938, Ethyl entered the field of TEL production. On this date, it entered into four agreements with E. I. du Pont de Nemours & Company—a lease agreement whereby it leased from du Pont certain properties at Deepwater, New Jersey, a manufacturing service agreement whereby it employed du Pont to operate the Deepwater plants in the manufacture of TEL, a license agreement running concurrently with the other two agreements under which the parties granted licenses and provided for a mutual disclosure of technological information and processes with respect to the manufacture of anti-knock compounds. A fourth agreement, a financing agreement, provided for the advance of funds (originally through notes and later through preferred stock) to Ethyl Corporation for its working capital needs at

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Deepwater, New Jersey, in predetermined amounts by du Pont, General Motors and Standard. These four agreements which originally expired in 1945 have been extended to December 31, 1947.

At the present time, the Deepwater, New Jersey plant is in operation for Ethyl by du Pont under the foregoing four agreements. Ethyl Corporation has put in considerable improvements in that plant. Ethyl is itself operating a plant at Baton Rouge, Louisiana, manufacturing TEL. This plant was formerly operated for Ethyl by du Pont.

In addition, Ethyl owns 50% of the common stock of Ethyl Dow Corporation, which manufactures ethylene di-bromide which enters, in turn, into the manufacture of TEL as the bromide fluxing agent. Ethyl has a facilities contract with Ethyl Dow for the furnishing of facilities.

Originally, Ethyl Export Corporation handled the overseas business of Ethyl. In 1939 a new company known as Associated Ethyl Company Limited was formed to replace Ethyl Export Corporation in the foreign field. At one time, General Motors Corporation had a stock interest in Associated Ethyl and certain foreign affiliates of Associated Ethyl. At the present time, General Motors Corporation no longer

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has any interest in Associated Ethyl Company Limited or any of its affiliates. Ethyl Corporation owns no stock in Associated Ethyl or any of its affiliates. It has, however, certain supply contracts for the sale to Associated Ethyl of materials.

(3) PATENTS

The four critical patents owned by General Motors Corporation are as follows:

- (a) U.S. Patent No. 1,573,846 issued February 23, 1926, and expiring February 23, 1943—the “product” patent:

Covering the addition of metallic compounds to internal combustion engine fuels. In the most specific claim the compound is identified as TEL.

- (b) U.S. Patent No. 1,592,954 issued June 20, 1926, and expiring June 20, 1943:

Covering the addition to the TEL fuel mixture of a halide (specifically claiming a chloride) to prevent fluxing.

- (c) U.S. Patent No. 1,668,022 issued May 1, 1928 and expiring May 1, 1945:

A “continuation in part” of (b) above, covering the addition to the TEL of a “volatile bromide” to prevent fluxing.

- (d) U.S. Patent No. 1,787,419 issued December 30, 1930, expiring December 30, 1947—the “method” patent:

Covering the method of utilizing a low compression motor fuel by forming a combustible mixture of the fuel and air and burning the mixture under a relatively high compression in the presence of a vaporized compounded element.

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As the foregoing data shows, the last of the four critical
patents owned by General Motors Corporation will expire
on December 30, 1947.

(4) ENTRY OF DU PONT INTO THE TEL FIELD

The du Pont Company publicly announced in September 1946 that it is proposed in the year 1948 to enter into the manufacture and distribution of anti-knock mixtures containing tetraethyl lead for addition to gasoline. Ethyl will also continue to manufacture and distribute TEL. Because of the relationship of General Motors Corporation, Ethyl Corporation and E. I. du Pont de Nemours & Company, this activity on the part of du Pont suggests certain problems under the Clayton Act and the Sherman Anti-Trust Act.

(5) RELATIONSHIP OF PARTIES

A. Stock

(1) Ethyl Corporation

The present authorized capital stock of Ethyl Corporation is divided into fifty million dollars of preferred stock and five million dollars of common stock. The common stock is owned 50% by General Motors Corporation and 50% by Standard Oil Company of New Jersey. The preferred stock is owned approximately $\frac{1}{8}$ by E. I. du Pont de Nemours & Company and the balance equally between General Motors Corporation and Standard Oil Company. It is to be assumed

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that the du Pont Company will dispose of its preferred stock prior to January 1, 1948.

(2) General Motors Corporation

Du Pont Company owns ten million shares of common stock of General Motors Corporation or approximately 22% of the outstanding stock.

B. Directors

There are 14 members of the Board of Directors of Ethyl Corporation, 4 of whom are members of the Board of Directors of General Motors Corporation, 5 of whom are either members of the Board of Directors of Standard Oil Company or represent that company and the remaining 5 directors are officers or employes of Ethyl Corporation.

Mr. Sloan who is Chairman of the Board of Directors, a member of its Financial Policy Committee and Chairman of the Bonus and Salary Committee of General Motors Corporation is also a director of Ethyl Corporation and E. I. du Pont de Nemours & Company.

Apart from Mr. Sloan, no other director of General Motors Corporation is also a director of E. I. du Pont de Nemours & Company and Ethyl Corporation. However, the following directors of General Motors Corporation are also directors of E. I. du Pont de Nemours & Company:

Donaldson Brown, who is also a member of the Financial Policy Committee of General Motors Corporation and of the Finance Committee and of the Bonus and Salary Committee of E. I. du Pont de Nemours & Company.

Walter S. Carpenter, Jr., who is also a member of the Financial Policy Committee of General Motors Corporation, President of E. I. du Pont de Ne-

mours & Company, Chairman of its Executive Committee and a member of its Finance Committee.

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Lammot du Pont Copeland, who is also a member of the Audit Committee of General Motors Corporation and Secretary of E. I. du Pont de Nemours & Company and a member of its Finance Committee.

Henry B. du Pont, who is also a member of the Bonus and Salary Committee of General Motors Corporation and a Vice President of E. I. du Pont de Nemours & Company and a member of its Executive Committee.

Angus B. Echols, who is also a member of the Bonus and Salary Committee of General Motors Corporation, a Vice President of E. I. du-Pont de Nemours & Company, Chairman of its Finance Committee and a member of its Executive Committee.

It is possible that at various times some of these persons or others may have been on non-standing committees. Thus recently, for example, Messrs. Sloan, Donaldson Brown and Angus B. Echols have been on a Committee for Study of Incentive Plans.

The Board of Directors of E. I. du Pont de Nemours & Company consists of 37 directors and the Board of Directors of General Motors Corporation consists of 28 directors.

C. General Motors Organizational Setup

In the General Motors Corporation organizational setup, Ethyl Corporation is known as an associated company. This company is under the jurisdiction of

Mr. Sloan who in turn reports to Mr. Bradley on this matter. Mr. Bradley in turn reports to the Financial Policy Committee. On the Financial Policy Committee are Messrs. Donaldson Brown, Walter S. Carpenter and Alfred P. Sloan, Jr., all of whom, as previously noted,

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are members of the Board of Directors, of E. I. du Pont de Nemours & Company and one of whom is in addition a member of the Board of Directors of Ethyl Corporation.

D. Previous Anti-Trust History

Ethyl Gasoline Corporation was the subject of a civil anti-trust proceeding in which its licensing arrangements were held to be violative of the Sherman Anti-Trust Act. 309 U.S. 436. Some further civil suits followed.

Questions Presented

The entry of du Pont into the manufacture and sale of TEL in competition with Ethyl Corporation, presents certain problems under the Anti-Trust Laws of the United States. In question form they may be presented as follows:

- (1) What violation, if any, will exist either of the Sherman Anti-Trust Law or of the Clayton Act by virtue of the fact that there are common directors on the boards of directors of General Motors Corporation, E. I. du Pont de Nemours and Ethyl Corporation?
- (2) Assuming that a violation of the anti-trust laws will exist under (1) what action if any should be taken

through the resignation or resignations of directors to remove such violation?

(3) Is the resignation of Mr. Sloan from the board of directors of Ethyl Corporation or du Pont Company

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necessary and if so, will his resignation remove any violation of the anti-trust laws so far as common directors are concerned?

(4) Assuming that there is no violation of the anti-trust laws growing out of common directors or that any such violation has been cured, is there anything else in the relationship of the three corporations that per se, apart from any other act or acts would constitute a violation on the part of General Motors Corporation of the anti-trust laws so far as the Ethyl situation is concerned?

It is to be assumed in this question that Ethyl and du Pont do not by agreement, or in concert with General Motors Corporation, fix prices or perform any other act that is forbidden by the anti-trust laws.

(5) Putting the preceding question slightly differently, does the ownership by du Pont of stock in General Motors Corporation in the foregoing percentage and the ownership by General Motors Corporation of the stock in Ethyl Corporation in the foregoing percentage, per se, and apart from any other factor, constitute a violation of the anti-trust laws of the United States?

In connection with this and assuming that the 50% ownership by General Motors Corporation of the common stock of Ethyl is a factor creating a statutory violation,

would a reduction of this percentage eliminate any such violation and if so, to what extent should the stock holdings be reduced?

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(6) Assuming that the price charged by du Pont for TEL is the same as the price charged by Ethyl for TEL and assuming further that that identity of price is the result solely of competitive economic forces, what can be done by way of documentation or otherwise so that General Motors Corporation may protect itself against a successful charge of violating the anti-trust laws, based on alleged price fixing or any other element.

In dealing with this question, it should be emphasized that it is the opinion of businessmen that du Pont's price for TEL must equal that of Ethyl, since buyers will not pay more to du Pont for TEL than they would pay to Ethyl, assuming an identity of product in quality. Following through this assumption, such a result would follow, even if Ethyl were to reduce its price because du Pont would immediately do the same thing. Again, in considering this problem, it should be emphasized that Ethyl as the historical narrative above indicates, is something developed and flowing out of activities on the part of General Motors and Standard Oil. There seems no sound legal reason, therefore, why the entry of du Pont into the field as a late patent-free competitor of Ethyl, should require General Motors Corporation to divest itself of its interest in Ethyl as the only irrefutable evidence that there have not, in connection with Ethyl, been violations of the anti-trust laws of the U.S.

(7) In connection with the preceding question, is there any advantage in changing the General Motors

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Corporation organizational setup so that Ethyl would fall under the jurisdiction of the Operations Policy Committee and members

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thereof rather than the Financial Policy Committee and members thereof? Would it also be advisable to have General Motors Corporation directors of Ethyl who are also members of the Financial Policy Committee of General Motors Corporation resign and have appointed in their places General Motors Corporation directors who are members of the Operations Policy Committee? This thought suggests itself because the Financial Policy Committee contains three members who are also members of the Board of Directors of E. I. du Pont de Nemours. This situation does not prevail in the Operations Policy Committee. The logic in this is that as a matter of organizational setup, there is a withdrawal from any contact with the du Ponts of the reported activities of Ethyl Corporation to General Motors Corporation, short of the board of directors of General Motors Corporation level. On the other hand, so far as this suggested change in the organizational setup is concerned, there is still the question of the common directors of General Motors Corporation and E. I. du Pont de Nemours.

George A. Brooks

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GENERAL MOTORS CORPORATION

BROADWAY AT 57TH STREET

NEW YORK 19, N. Y.

December

5th

1947

E. I. du Pont de Nemours & Company,
Wilmington, Delaware.

Sirs:

The Lease Agreement between Ethyl Corporation and E. I. du Pont de Nemours Company, covering certain property at Deepwater, N.J., entered into on or about January 1, 1938, and thereafter extended, will, as extended, expire on December 31, 1947. You are presently the owner of 36,497 shares of 7% Preferred Stock of Ethyl Corporation of the aggregate par value of \$3,649,700. The agreement made between yourself, Standard Oil Company and the undersigned dated April 9, 1941 provides that if, at the time of expiration of the foregoing extended Lease Agreement, Ethyl Corporation should not have redeemed the 7% Preferred Stock then owned by you, Standard Oil Company and the undersigned would purchase from you in equal amounts and you would sell to them such 7% Preferred Stock at par and accrued dividends.

We are informed that Ethyl Corporation will not redeem its 7% Preferred Stock prior to December 31, 1947. We, therefore, notify you that, in the exercise of our rights

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pfd outstanding
9-30-47

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under the aforesaid agreement dated April 9, 1941, we will purchase from you one-half of the 7% Preferred Stock of Ethyl Corporation owned by you at par and accrued dividends, if any. Standard Oil Company, we are informed, is also notifying you at or about this date of its like intention to exercise its like purchase rights under the aforesaid agreement dated April 9, 1941.

It is suggested that the purchase and sale take place at Chrysler Bldg. 11:30 A.M. December 31, 1947, at the office of Ethyl Corporation, 405 Lexington Avenue, New York, N.Y. We will deliver to you at that time and place our check in the principal sum of \$1,824,850, the par value of one-half the shares of 7% Preferred Stock of Ethyl Corpora-

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tion owned by you, and Standard Oil Company, we understand, will likewise deliver to you its check in the like principal sum of \$1,824,850 against delivery of the certificates of stock for said 36,497 shares of 7% Preferred Stock of Ethyl Corporation properly endorsed with the necessary federal and state transfer stamps properly affixed and with any supporting documents necessary to effect the transfer to Standard Oil Company and the undersigned of said shares in equal amounts. A quarterly dividend of \$1.76 per share, payable December 31, 1947, was declared by the Board of Directors of Ethyl Corporation on December 2, 1947, payable to holders of record December 15, 1947. Since this dividend will be received by you on these 36,497 shares, there will be no adjustment required for accrued dividends at December 31, 1947.

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Will you please advise if this is agreeable to you at your earliest convenience.

Yours very truly,

GENERAL MOTORS CORPORATION

By: *F. G. Donner*

F. G. Donner

Vice President

Fowler —→ *R. H. Cowlishaw*

Asst. Treas.

Ethyl
cannot issue ½ share

NOTE: At upper right of first page is stamped "Noted W.J.B."; after the figure "36,497" in the fifth line is drawn a small check mark; at lower right of both pages is written "GM-1343"; line in margin on second page is by hand; italics indicate handwriting; underlining first page is by hand.

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GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK 19, N. Y.

February 25, 1948.

To: Board of Directors
FROM: Special Committee—Ethyl Corporation
SUBJECT: PURCHASE OF DU PONT HOLDINGS OF
PREFERRED STOCK OF ETHYL CORPORATION
BY GENERAL MOTORS CORPORATION AND
STANDARD OIL COMPANY (N.J.)

On July 7, 1947 your Board created a special committee to have charge of the investment of General Motors in Ethyl Corporation and of all matters connected therewith with authority to take such action in regard thereto, as in its discretion it shall deem appropriate. This Special Committee is reporting the acquisition by General Motors Corporation of Ethyl Corporation preferred stock held by E. I. du Pont de Nemours & Company as a result of action taken at a meeting held November 3, 1947, the transaction being consummated on February 9, 1948.

Effective January 1, 1938, Ethyl Corporation and E. I. du Pont de Nemours & Company entered into a lease agreement covering certain properties at Deepwater, New Jersey. On April 9, 1941, Standard Oil Company (N.J.), General Motors Corporation and du Pont entered into an agreement which provided, in substance, that at the expiration of the lease agreement Standard Oil and General Motors would purchase from du Pont, in equal amounts, any 7% preferred stock of Ethyl then owned by du Pont.

The lease agreement between du Pont and Ethyl expired December 31, 1947, at which time du Pont owned 12.2%

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the outstanding 7% preferred stock of Ethyl, representing 36,497 shares with a total par value of \$3,649,700. Of the balance of the preferred stock outstanding, 131,076 shares at a par value of \$13,107,600 were held by General Motors Corporation and an equal amount by Standard Oil Company (N.J.). In view of the expiration of the agreement which required that Standard Oil and General Motors purchase from du Pont any 7% preferred stock of Ethyl held by du Pont, Standard Oil and General Motors each purchased, at the par value of \$1,824,850, one-half of the Ethyl preferred stock held by du Pont. Since one-half of the number of shares of preferred stock held by du Pont resulted in a fractional share, Standard Oil and General Motors each transferred one-half of a share to Ethyl upon payment by Ethyl of \$50.38, which amount represented the par value and accrued dividends applicable to the one-half share. In final result, therefore, Standard Oil and General Motors each acquired 18,248 shares of the Ethyl Corporation 7% preferred stock previously held by du Pont.

Respectfully submitted,

Special Committee—Ethyl Corporation

Albert, Bradley, Chairman

F. G. Donner

Earle F. Johnson

Charles F. Kettering

NOTE: At upper left is written "Mr. G. N. Brooks"; at upper right is stamped "Received Feb 26, 1948, Office of Secretary".

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49.8

BILL OF SALE

ETHYL CORPORATION

to

E. I. DU PONT DE NEMOURS AND COMPANY

KNOW ALL MEN BY THESE PRESENTS: that ETHYL CORPORATION, a Corporation of the State of Delaware (hereinafter referred to as "ETHYL") pursuant to Paragraph 3 of an agreement (designated as "Operating Interim Agreement") entered into as of June 10, 1947 with E. I. DU PONT DE NEMOURS AND COMPANY, a Corporation of the State of Delaware (hereinafter referred to as "DU PONT") and in consideration of the payment to ETHYL by DU PONT of the sum of Two Million Nine Hundred and Seventeen Thousand Dollars (\$2,917,000) receipt whereof is hereby acknowledged, does hereby grant, convey, bargain, sell, assign, transfer, set over, confirm and deliver to DU PONT, its successors and assigns, all right, title and interest of ETHYL in and to all of ETHYL's tangible property (including furniture and extra machinery) at DU PONT's Chambers Works, Deepwater Point, New Jersey, excepting, however (a) Tank cars, tank trucks and drums (b) Project C-1286 covering facilities for scrapping drums and (c) Any and all items of operating inventory and capital plant projects which have been authorized by ETHYL after June 10, 1947 and prior to December 31, 1947.

TO HAVE AND TO HOLD all the property hereby sold, conveyed, assigned and transferred to DU PONT, its successors and assigns, to its and their own use and benefit forever.

IN WITNESS WHEREOF, ETHYL has caused these presents to be execute by its proper officers thereunto duly author

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ized and its corporate seal to be affixed hereto this 31st day
of December, 1947.

ETHYL CORPORATION

By *L. L. Shea*

Attest:

J. C. Gonzalez

Secretary

NOTE: At lower right is written "GMC-1001"; italics
indicate handwriting.

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"IMMUNITY AND CANCELLATION AGREEMENT"

THIS AGREEMENT made as of the first day of January, 1948, by and between

ETHYL CORPORATION, a corporation of the State of Delaware (hereinafter referred to as ETHYL)

and

E. I. DU PONT DE NEMOURS AND COMPANY, a corporation of the State of Delaware (hereinafter referred to as DU PONT).

WITNESSETH:

WHEREAS, since the organization of ETHYL in 1924, the parties hereto have been cooperatively engaged in the manufacturing, compounding and shipping of anti-knock compounds containing lead alkyls as the anti-knock agent, including research work with respect thereto and the production of intermediate materials for such manufacturing and compounding, and in connection therewith have cooperated in the building, equipping and operating of manufacturing plants for the production of said anti-knock compounds and materials; and

WHEREAS the said parties desire to be free to engage separately and independently of each other in the manufacturing, compounding, shipping and selling of said products;

Now, THEREFORE, in consideration of the premises and the covenants and agreements hereinafter set forth, it is mutually agreed as follows:

1. Each of the parties hereto covenants and agrees, now and forever, that it will not sue the other party in any

country of the world on account of the use or alleged infringement of any United States or foreign patent, the invention of which was used in a commercial operation by either of the parties hereto prior to the date hereof, where the act complained of consists in:

- (a) the manufacture, use or sale of one or more lead alkyls for any purpose or the

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manufacture, use or sale of any anti-knock compounds, the effective anti-knock agent of which is made up wholly or one or more lead alkyls; or

- (b) the manufacture, use or sale of any of the following materials, viz., Methyl Chloride, Ethyl Chloride, Ethylene Dichloride, Hydrochloric Acid, Sodium, Chlorine, Alloys composed principally of Lead and Sodium, and by-products obtained in the manufacture of the above materials, including, but without limitation thereto, Salt Cake, Aromatic Distillate and Tar; or

- (c) the construction or operation of any building, machinery, equipment, or installation, used for or in connection with the manufacture, use, or sale of any compounds or materials covered in sections (a) or (b) of this paragraph.

2. Each of the parties hereto covenants and agrees, now and forever, that it will not sue the other party where the act complained of consists in the use, in any country and in any way or for any purpose, of any unpatented information or "know-how", relating to any process, equipment, compound, material, mixture or design heretofore received or acquired from the other party relating to the foregoing compounds and materials or to the construction

or operation of any building, equipment or installation therefor (except that ETHYL agrees it will not disclose to others any confidential technical knowledge or information, obtained from DU PONT and relating to the manufacture of sodium, for a period of ten years from the date hereof except as may be necessary for ETHYL's use and enjoyment thereof).

—3—

3. Each of the parties hereto further covenants and agrees, now and forever, that it will not sue any person in any country of the world for the use or alleged infringement of any United States or foreign patent the invention of which was owned or controlled by either party hereto and was used in a commercial operation prior to the date hereof, on account of the use or sale of compounds or materials manufactured or sold by the other party and covered in section (a) of Paragraph 1 above; or on account of the manufacture, use or sale of products containing any such compounds or materials manufactured or sold by either party hereto.

4. With respect to transferrable patent rights and information owned or controlled by either party and licensed to or from third persons, the immunities granted herein by either party shall apply only in so far as and to the extent that said party hereto has the right to grant such immunities; but to that extent each party undertakes that the obligation of immunity shall be accepted by such third persons. Without limiting the generality of the foregoing, it is understood that the immunities above referred to shall extend to the patents and information of third persons which ETHYL is authorized now to use and now is using commercially in the manufacture of ethyl chloride from

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ethylene; and in consideration thereof DU PONT covenants and agrees that ETHYL may extend to such third persons the immunities granted above to ETHYL in so far as they relate to the manufacture of hydrochloric acid by the "Mannheim" process and the by-products produced by such process or to the use or sale of such hydrochloric acid or by-products so manufactured.

5. It is expressly understood that the immunities from suit granted in Paragraphs 1, 2, 3 and 4 above shall not extend to any patent other than a patent (1) covering as such a compound or material designated in one of sections (a) or (b) of Paragraph 1; (2) covering a process for the manufacture of such compound or

—4—

material; (3) covering any buildings, machinery, equipment or installation heretofore used in the manufacture, handling, storage or transportation of any compound or material designated in sections (a) or (b) of Paragraph 1 or of any motor fuel containing any compound or material designated in section (a) of Paragraph 1; or (4) covering the use in motor fuel of a compound or material designated in section (a) of Paragraph 1.

6. DU PONT covenants and agrees to assign to ETHYL an undivided one-half interest in all patents heretofore or hereafter issued or assigned to DU PONT on applications filed prior to the date of this agreement based on inventions relating to the manufacture of lead alkyls resulting from research work done by DU PONT for the account of ETHYL, pursuant to Article III.F of the certain agreement between the parties hereto dated January 1, 1938 and known as the "Manufacturing Service Agreement". Such assignment

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shall be effected promptly upon the issuance of each such patent. The phrase "applications filed prior to the date of this agreement" is understood to include divisions, continuations, renewals, reissue applications and corresponding applications for foreign patents, regardless of date of filing, where the same are based upon an application filed prior to the date of this Agreement.

7. Neither party shall be deemed because of this Agreement to admit the validity of any patent referred to herein, and each party shall be free to deny the validity of any such patent.

8. Nothing herein contained shall be deemed to authorize either party or any other person to use any of the trademarks, trade names, trade-mark designs, symbols, or insignia of the other party, or any simulation thereof, and no immunity from liability for such use is hereby granted.

—5—

9. Except as herein provided, each and every previous agreement between the parties, together with every patent right granted pursuant thereto relating to the aforesaid subject-matters, of every kind and description, whether written or oral; express or implied, is hereby terminated and cancelled as of December 31, 1947; and all of the provisions thereof which would otherwise survive termination are hereby terminated excepting and reserving, however, (a) the right to continue the non-exclusive foreign licenses under DU PONT patents granted by ETHYL to Associated Ethyl Company Limited of London; (b) those provisions which obligate ETHYL to pay DU PONT compensation or sodium royalty earned or accrued prior to January 1, 1948; (c) those provisions which obligate ETHYL to indemnify

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or reimburse DU PONT on account of liabilities and costs, including legal expenses and depreciation, arising out of DU PONT's operation, maintenance and construction of any plant for ETHYL'S account prior to January 1, 1948; (d) those provisions under the agreement of lease which obligate ETHYL to indemnify or reimburse DU PONT for any property destroyed or damaged between June 10, 1947, and January 1, 1948; and (e) the provisions of the so-called "operating interim agreement" entered into by the parties hereto as of the tenth day of June, 1947, a copy whereof is annexed hereto marked Exhibit A and made a part hereof.

10. Each of the parties does hereby remise, release and forever discharge the other of and from all manner of actions or causes of action, claims and demands which against the other party it ever had, now has or which it or its successors hereafter can, shall or may have, from the beginning of the world to January 1, 1948, upon or by reason of any matter, cause or thing whatsoever relating to the aforesaid subject-matter, save and except those provisions of the previous agreements between the parties which are expressly excepted and reserved in and by Paragraph 9 of this Agreement.

—6—

11. Except as herein expressly otherwise provided this Agreement is personal and non-assignable and the benefits thereof shall inure exclusively to the parties hereto or to their successors, or to a subsidiary corporation a majority of the voting stock of which is owned or controlled by either party.

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IN WITNESS WHEREOF the parties hereto have caused
these presents to be signed and their seals attached hereto
this 19th day of August, 1947.

ETHYL CORPORATION

By *H. W. Kaley*
Vice President

ATTEST:

J. C. Gonzalez
Secretary
(SEAL)

E. I. DU PONT DE NEMOURS & COMPANY

By *E. G. Robinson*
E. G. Robinson, General Manager
Organic Chemicals Department

ATTEST:

L. duP. Copeland
Secretary
L. duP. Copeland
Attorney E. C. Woodhouse
Approved By S. L. Abrams
(SEAL)

JEK

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EXHIBIT A

"OPERATING INTERIM AGREEMENT"

AGREEMENT made as of the tenth day of June, 1947, between ETHYL CORPORATION, a Delaware corporation (referred to herein as "ETHYL") and E. I. DU PONT DE NEMOURS & COMPANY, also a Delaware corporation (referred to herein as "DU PONT"),

WITNESSETH:

WHEREAS ETHYL and DU PONT have been operating under the terms of a Manufacturing Service Agreement and Lease Agreement dated January 1, 1938, as amended, which expire on December 31, 1947; and

WHEREAS of the four manufacturing units at the Chambers Works referred to in said agreements as the Deep-water Plants, "D" and "E" are presently in operation and "B" and "C" are idle and in connection with said operations there were formerly used certain plants for the manufacture of ethyl chloride known as No. 1, No. 2-A and No. 2-B; and

WHEREAS it is desired to modify said agreements as hereinafter provided,

NOW, THEREFORE, in consideration of the premises and the covenants and agreements herein contained, it is hereby agreed as follows:

1. DU PONT shall continue to produce until December 21, 1947, TEL for the account of ETHYL in said units "D" and "E" as heretofore, except that it may produce and blend

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for its own account up to 6,000,000 pounds of TEL at a rate not exceeding 1,500,000 pounds in any month. All materials required for TEL produced for the account of DU PONT shall be supplied by it at its own expense. All other costs shall be borne ratably by DU PONT and ETHYL in proportion to the amounts of products manufactured for their respective accounts.

2. DU PONT at its option may recondition and operate for its own account and at its own expense any one or more of the said ethyl chloride units without liability to ETHYL therefor. ETHYL

—2—

shall have the option to buy and DU PONT agrees to sell, at Cost Sheet Cost plus ten per cent. (10%), all ethyl chloride so produced, in excess of 1,000,000 pounds and such amounts as may be required and used by DU PONT in its Chambers Works operations; provided, however, ETHYL shall have the right at its option to purchase and DU PONT agrees to sell at a price of Cost Sheet Cost plus ten per cent. (10%) any amount so produced in excess of 8,000,000 pounds of ethyl chloride, in case of an unusual interference with ETHYL's production as in Paragraph 9 provided.

3. ETHYL will sell to DU PONT and DU PONT will purchase from ETHYL as of December 31, 1947, for the sum of \$2,917,000, all of ETHYL's tangible property at said Chambers Works (including furniture and extra machinery) whether or not such property is listed in DU PONT's records, excepting, however, (a) Tank cars, tank trucks and drums, (b) Project C-1286 covering facilities for scrapping drums, (c) Any and all items of operating inventory and capital plant projects which may be authorized by ETHYL after the effective date hereof, and (d) Such file cabinets as ETHYL may select and remove from its offices

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at Chambers Works prior to December 31, 1947. ETHYL will pay DU PONT for DU PONT's own use the sum of \$1,132,000 in full payment and satisfaction for deferred repairs to those facilities which were not maintained in good operating condition because of low production rates. To effect these payments, the difference between said two sums, namely \$1,785,000 will be paid by DU PONT to ETHYL on December 31, 1947.

4. ETHYL will also pay to DU PONT the cost, estimated at \$154,000, of completing all construction projects of a capital nature owned by ETHYL at the said Chambers Works authorized by ETHYL prior to the date hereof and included as though completed in the above purchase and sales price of \$2,917,000, including any sums of money necessary for such completion expended subsequent to December 31, 1947

—3—

5. ETHYL will authorize the necessary repair projects at said Chambers Works required for the operations covered hereunder and will pay the cost thereof to DU PONT including any sums of money necessary for the completion of such authorized repair projects expended subsequent to December 31, 1947, except that DU PONT shall pay and bear all repair costs pertaining to ethyl chloride plants operated by it for its own account unless otherwise provided in Paragraph 9, or pertaining to the reconditioning of "B" and "C" Manufacturing Units as provided for in Paragraph 8 or 9 on a normal repair schedule. Authorized Projects C-1256, 1257, 1264, 1265, 1269, 1271, 1275 and MC-85 to extent uncompleted are hereby cancelled as of the effective date hereof and all appropriations of money authorized therefor but unspent, in the approximate sum of \$80,000, are also cancelled.

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6. No compensation shall be paid to DU PONT by ETHYL under Article VII of said Manufacturing Service Agreement on the purchase and sales price of \$2,917,000 herein provided for. For purposes of calculating DU PONT's compensation ETHYL shall charge to its cost of sales,—

(a) depreciation at the normal rates of 3% and 10% per year until December 31, 1947, on ETHYL's property as provided for by Article III (e) of said Manufacturing Service Agreement, and

(b) deferred repairs in the amount of \$1,132,000 as specified in Paragraph 3 hereof.

If ETHYL should sustain a loss on the property sold to DU PONT as herein provided, no part of such loss shall be charged against DU PONT's compensation, but should such property loss be charged against the royalty that ETHYL is obligated to pay third parties in respect of operations during 1947, DU PONT's compensation shall not be increased by such reduction in royalty.

7. In respect to the operation of any ethyl chloride plant by DU PONT and its manufacture of TEL for its own account from the date of the commencement of both said operations and continuing until

—4—

December 31, 1947, the plant overhead to be paid by ETHYL shall be at the rate of 75¢ per each dollar of labor present in the monthly Cost Sheets in addition to the applicable cost shown on the Idle Cost Sheets of the "B" and "C" Manufacturing Units at said Chambers Works and all other incidental idle costs of the TEL Area, provided, however, that the penalty overhead charge shall be \$25,000 per month and the penalty power charge shall be \$7,000 per month. Effective on and after said date and except as otherwise

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provided herein, ETHYL shall be relieved of all liability for charges incurred by DU PONT applicable to the ethyl chloride units at said Chambers Works, and likewise DU PONT shall be relieved of all liability for such charges incurred by ETHYL.

8. DU PONT will recondition and operate said "C" Manufacturing Unit as expeditiously as possible consistent with good operating practice and to the extent it deems advisable or necessary in order to produce the maximum reasonably possible quantity of TEL during the remainder of 1947, which quantity ETHYL agrees to take and pay for under the terms of the Manufacturing Service Agreement. Except as otherwise provided herein, ETHYL will supply, from plants other than the Chambers Works, all of the ethyl chloride required for all its Chambers Works TEL production. During any period of operation of "C", "D" and "E" Manufacturing Units the ratable cost of production specified in Paragraph 1 hereof shall be the ratable part of the total cost for the three units, including the shutdown expense applicable to the "C" unit provided that this unit is shut down by DU PONT immediately following December 31, 1947. With "C", "D" and "E" Units in simultaneous operation at approximately full capacity, the penalty charges of \$25,000 and \$7,000 specified in Paragraph 7 above shall be revised to \$12,000 and \$3,000 respectively.

9. In case of a substantial interference with ETHYL's normal production elsewhere, DU PONT at the request of ETHYL will operate, to the extent reasonably possible consistent with good operating practice, said "B" Manufacturing Unit for ETHYL's account

—5—

until December 31, 1947, and will provide ethyl chloride for ETHYL from the available ethyl chloride plants at said Chambers Works, subject to Paragraph 2 hereof. With the

"B" Manufacturing Unit in operation the charges specified in Paragraph 7 will be revised to take into account operation of the formerly idle "B" Unit. Any ethyl chloride produced by DU PONT for ETHYL under this paragraph shall be sold to ETHYL at DU PONT's Cost Sheet Cost therefor plus ten per cent, (10%).

If the cost of reconditioning to start operations as provided in this paragraph or Paragraph 8 shall exceed the amounts allowed for such work in computing the sum of \$1,132,000, ETHYL will pay such excess cost. Further, ETHYL agrees to pay the shutdown expenses incurred by DU PONT in closing down such facilities if no longer used or required by DU PONT on December 31, 1947. Prior to starting reconditioning as provided for in this paragraph, the parties hereto will determine the practicability of placing said facilities in quick operation, estimate the cost of possible later date reconditioning and endeavor to conclude a plan of operation to cover such emergency conditions. The estimate of cost for such expense will be paid by ETHYL prior to such reconditioning based upon the agreed upon estimate.

10. The purchase and sales price of ETHYL's property above provided for in Paragraph 3 in the sum of \$2,917,000 is predicated upon the assumption that all such property in existence on the effective date hereof shall be in existence and transferred to DU PONT on December 31, 1947. In the event that any such property shall not be in existence on December 31, 1947, proper allowance will be made to DU PONT therefor. All property insurance coverage now in force on such property, shall be continued through 1947 and the present insurance practice shall remain unchanged.

—6—

11. Except as herein modified, the said Manufacturing

1973

Service Agreement and Lease Agreement shall remain in full force and effect until December 31, 1947.

12. It is understood and agreed that this agreement shall be annexed to, marked Exhibit A, and made a part of an agreement entered into between the parties as of January 1, 1948.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be signed and their seals attached hereto this 19th day of August, 1947.

ETHYL CORPORATION

By

H. W. Kaley
Vice President

ATTEST:

J. C. Gonzalez
Secretary

E. I. DU PONT DE NEMOURS & COMPANY

By

E. G. Robinson

E. G. Robinson, General Manager
Organic Chemicals Department

ATTEST:

L. duP. Copeland
Secretary

L. duP. Copeland

Attorney T. R. Hanley

Approved By S. L. Abrams

JEK

NOTE: At lower right of first six pages is written "GMC-1001a"; at lower right of last six pages is written "GMC-1001b"; in left margin of page 6 are written three sets of illegible initials; in left margin of 12th page are written three sets of illegible initials; italics indicate hand-writing.

(2693)

TETRAETHYL LEAD
THE DISTRIBUTION OF PROFITS
(In thousands of dollars)

Year	Ethyl Net Sales	Ethyl Net Income	Royalties Paid to General Motors	Dividends Paid to General Motors	Ethyl Dividends Paid to Standard Oil	Ethyl Dividends Paid to Du Pont Tetraethyl Oil	Du Pont Tetraethyl Profits
1924	\$ 2,036	\$ (64)	\$	\$	\$	\$	\$ (289)
1925	849	{ 1,357 }					357
1926	2,920	{ 1,212 }					(14)
1927	5,495	(99)					771
1928	8,223	1,587					1,385
1929	19,276	5,263	1,000	1,000	1,000	1,000	3,654
1930	24,931	6,863	2,170	2,700	2,700	2,700	4,613
1931	26,867	7,555	2,206	4,331	4,331	4,331	4,695
1932	16,038	3,708	1,144	2,700	2,700	2,700	1,784
1933	22,767	5,793	1,628	2,350	2,350	2,350	3,472
1934	33,177	8,538	2,647	3,950	3,950	3,950	4,628
1935	34,476	8,566	2,495	4,250	4,250	4,250	5,519
1936	37,348	9,185	2,737	4,400 ²	4,400	4,400	4,882
1937	45,498	10,964	3,104	4,750 ³	4,750	4,750	5,262
1938	49,805	11,746	2,845	5,000	5,000	5,000	4,783
1939	64,363	18,483	4,412	8,500	8,500	8,500	5,534
1940	81,674	20,508	4,335	8,750	8,750	8,750	6,902
1941	88,356	19,181	3,408	8,500	8,500	8,500	6,509
1942	61,972	9,118	1,446	2,513	2,513	2,513	3,942
1943	81,943	11,765	2,151	4,688	4,688	4,688	3,918
1944	97,928	12,854	2,182	4,875	4,875	4,875	3,853
1945	105,464	15,366	1,775	4,125	4,125	4,125	3,800
1946	76,132	13,285	1,606	3,300	3,300	3,300	3,948
1947	91,481	10,059	78	1,950	1,950	1,950	2,784
Total	\$1,079,019	\$207,655	\$43,369	\$82,632	\$82,632	\$86,692	

1. Does not include profits derived from supply of materials used in production of tetraethyl lead and ethyl fluid.

2. Includes \$29,333 dividends paid to du Pont.

3. Includes \$31,667 dividends paid to du Pont.

Note: Figures in parentheses indicate loss.

1975

SECRET

(Excerpt of letter to J. L. Pratt from E.G. Bischler 3/11/30)

There is one specific thing, though, we would appreciate your giving a lot of thought, because we need a decision fairly soon, and that is, the manufacture of our new refrigerant. We want to get into that as quickly as possible, and from our standpoint might say we feel that we would like to see it done by us, meaning either the Frigidaire Corporation or General Motors, or some Division you might want to set up; in other words, we feel a great deal would be gained if we would control this rather than let some chemical company do it.

I do not know whether you have heard it or not, but we have direct information from the duPont Company that they are launching a plan to investigate new refrigerants themselves, and we understand they are working somewhat with the same chemicals from which we have developed our new refrigerant. Because of our seeking a detector for this new refrigerant, the duPont Company have learned somewhat of the chemicals we ourselves are using.

Yours very truly,

(signed E. G. Bischler
General Manager.

(2195)

Government's Exhibit No. 839

1976

COPY

(Excerpt of letter to E. G. Bieschler from J.L. Pratt 3/15/30)

In regard to the manufacture of the new refrigerant, I am of the opinion that this should be made at Dayton in the plant adjacent to the Frigidaire plant. Whether or not it should be made by one of General Motors subsidiaries or divisions I have not just been able to determine in my own mind, and shall discuss same with Mr. Sloan, who will return in a few days.

It is quite a fundamental step for us to start General Motors in chemical manufacture. Up to this time we have more or less elected to confine ourselves to the mechanical side of manufacture and I do not want to depart from this until very thorough consideration has been given to all of the factors involved. I do not believe we should start in manufacturing until we have the problems of manufacture a little more definitely solved than they were when I was last in Dayton. At that time Mr. Midgley had about satisfied himself that the "wet" process of using hydrochloric acid would be too expensive and was just starting to arrange his apparatus to try out a "dry" process. It was not quite clear to me how he expected to get the "dry" hydrochloric acid without going through the "wet" process. This, however is a problem I don't suppose I should worry about but let Mr. Midgley and the other chemists solve, but I do believe that we should know we have a workable process not only from the standpoint of chemical reaction but from the standpoint of plant maintenance and cost, before we embark on much of a program to use this material.

(2696)



1977

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
DYESTUFFS DEPARTMENT
WILMINGTON, DELAWARE

March 28, 1930

Mr. John L. Pratt, Vice-President,
General Motors Corporation,
224 West 57th Street,
New York City, N. Y.

Dear John:

We are attaching hereto copies of our wires of today to you and Mr. Williams, with regard to the visit of representatives to Dayton to discuss with the Frigidaire people there, the question of the manufacture of F-12. I presume you will already have advised Mr. Williams, in Mr. Biechler's absence, that these men are coming and that it is intended they shall discuss fully the question of methods of manufacture of this product. We are arranging to have these men there at the earliest possible moment, since we understand this is your desire and we entirely agree with you that the possibilities of this proposition are such that we should proceed to cooperate with the least possible delay.

I will be very glad to discuss further with you, either here or in New York, whichever you see fit, the methods to be followed in trying to exploit this material with the greatest possible speed and benefit.

Very truly yours,

E. G. ROBINSON,
GENERAL MANAGER

(2697)

MRB/LPL

March 29, 1930

Mr. E. G. Robinson, General Mgr.,
Dyestuffs Department,
E.I. duPont deNemours & Co.,
Wilmington, Delaware.

Dear Robbie:

I have your letter of March 28th, and am very glad to know that you are getting such prompt action, on the part of your organization, in regard to the investigation of the new gas.

As soon as Messrs. Calcott and Kinsman return and report to you I will be glad to have an opportunity to sit down with you and see along what lines we can best work out satisfactory operations.

With kind regards,

Very truly yours,

Vice President

JLP:V

copy to Mr. Biechler

(2698)

4979

June 12, 1930

Mr. E. G. Robinson, General Mgr.,
Dyestuffs Department,
E.I. duPont deNemours & Company,
Wilmington, Delaware.

Dear Robbie:

Referring to the proposed organization of the company to be owned by the DuPont Company and General Motors, for the manufacture of certain chemicals to be used as refrigerants, and possibly other chemicals that may be developed in General Motors laboratories. Taking the proposed outline of organization you submitted when I was recently in Wilmington, I will review same in order of the sub-captions:

NAME OF COMPANY: We do not think the name of the company should be tied up solely with fluorine. We take this position because of the possibilities of other chemicals being developed in General Motors laboratories which we might desire to manufacture in this proposed company and which might have no relation whatever to fluorine.

PURPOSE: We recognize from the DuPont standpoint the necessity for limiting the kinds of chemicals manufactured in which the new company should embark. From General Motors' standpoint I think it would be satisfactory to have the purpose of the new company to manufacture fluorine with a fluorine atom substituted for at least one hydrogen atom of halogenated methane or ethane. In addition I would like to see the charter provide that the company could

manufacture any chemicals that might originate in the laboratories of General Motors Corporation, and exclude any chemicals that originated in the DuPont developments except DuPont developments that flowed out of General Motors developments.

CAPITAL STRUCTURE: It will be satisfactory for the company to be set up on the basis of DuPont owning 51% of the stock of the company and General Motors Corporation owning 49%. You should be in better position to say how much capital will be required to properly finance the company.

—2—

OFFICERS: We will be glad to have the DuPont Company designate from its employes the officers of the new company. However, we would like to see eventually the man who is actually responsible for the operation of the company be its President and General Manager, and that he be a full time employe of the new company. In regard to the Directors, it is satisfactory to us to have five or seven directors, the majority of whom will be of duPont designation.

SEMI-COMMERCIAL PLANT: It is our understanding that the company for the time being will operate the semi-commercial plant at Moraine, Ohio. When other processes than the Midgley process have advanced in the laboratory to the point where it is desirable to build another semi-works plant to try out a new process, it will be satisfactory that this semi-works plant be located at Deepwater Point, New Jersey.

PERMANENT PLANT LOCATION: We feel that the permanent plant should be located primarily from the standpoint where the economics of assembly of raw materials

and delivery of finished product will fix the location. It is our feeling that the plant should be located from the standpoint of being made an entirely separate entity from any other operating unit of the DuPont Company. Our idea being that if it is made a department of some other DuPont plant there will always be room for argument on proper dis-

tribution, overhead, etc. We have no objection if the economic location of the permanent plant is at a point where the DuPont Company or one of its subsidiaries already have an existing plant, where part of the property could be sold or transferred to the new chemical company.

PLANT MANAGEMENT: It will be the province of the DuPont Company to provide the proper managerial staff of the plant, and those employes of the DuPont Company who are giving all of their time to the new company will be transferred to the payroll of the new company; and for general supervision of the operations by the DuPont staff and for reimbursement to some extent to the DuPont Company for drawing from its own proven personnel and transferring same to the new company, it is agreeable that the new company pay the DuPont Company a managerial fee of \$50,000 a year for a period of five years. It is assumed that after a period of five years the new company will be sufficiently organized so that it can operate without drawing on the managerial experience of the DuPont Company other than what the DuPont Company as well as General Motors Corporation will be willing to give from the standpoint of stockholders of the company.

FRIGIDAIRE PATENTS: Frigidaire will grant a license to the new company the right to manufacture under processes developed, and for the purpose of sale for uses on which

Frigidaire has made applications for patents. From General Motors standpoint we would prefer that Frigidaire be reimbursed by a royalty based on so much per pound or a

—3—

percentage of the selling price, rather than the proposed royalty on profits.

DUPONT PATENTS: We would like to approach this problem from the standpoint that the new company will pay the DuPont Company out-of-pocket expense made up to the date of the forming of the new company, for work done on the products that will be manufactured by the new company, rather than undertake to pay royalties on processes that may be developed by the DuPont Company on ideas which originated with the Frigidaire Corporation.

MIDGLEY PATENTS: All applications for patents which Midgley has will be transferred to the Frigidaire Corporation with the possible exception of recognition of the rights that the Ethyl Gasoline Corporation may have for use of the materials in doping motor fuels. This point will have to be cleared up more definitely.

RESEARCH: The new company to pay DuPont and General Motors for any fundamental and applied research that the new company may request either of these organizations to do.

SALES: It is agreeable to us that the new company be set up on the basis that sales of its product will be handled through the DuPont sales organization. However, it should be understood that there will be no charge by the DuPont sales organization for sales made to the Frigidaire Corporation, as there will be no sales effort involved in this transaction.

SELLING PRICES: We think selling prices will have to be governed somewhat by price of other competitive refrigerating gases. However, we would be satisfied that price be set on the basis of the yield say not in excess of 30% of the capital employed in the new company. This yield might be increased if a low enough cost can be developed so that the competitive price situation is favorable.

After you have had an opportunity to go over these proposed suggestions, and if they are in line with what the DuPont Company is agreeable to, we will be glad if you will try to work out a somewhat more definite agreement than the one on which this outline is based.

Very truly yours,

J. L. Pratt

Vice President

JLP:V

copy to Mr. Donaldson Brown: ✓

NOTE: Illegible handwriting with a line through it appears in uppermost part. Lines appear in the left hand corner immediately in front of the second and third paragraphs.

On the last page handwritten checks are underneath the signature of the Vice President and following the printed words "copy to Donaldson Brown." Italics indicate handwriting.



E.I.DU PONT DE NEMOURS & COMPANY
INCORPORATED
DYESTUFFS DEPARTMENT
WILMINGTON, DELAWARE.

1954

June 24, 1950

Mr. John L. Pratt,
General Motors Corporation,
284 W. 57th Street,
New York City, N. Y.

Dear John:

REFRIGERANTS

I received your letter of June 12th with regard to the formation of the proposed subsidiary to handle the manufacture of Refrigerants and possibly other chemicals which may be developed by General Motors. We are drawing up an agreement to incorporate the terms for the formation of this new company and expect to be able to submit you something for consideration at an early date.

In accordance with our telephone conversation this morning, Mr. Williams suggested that Mr. Calecott come to Dayton to discuss research work in connection with the refrigerants and both Mr. Calecott and Dr. Elley are leaving for Dayton tonight to be there tomorrow. It is my understanding that you agree that as far as research work on the manufacture is concerned, this should be done in one place, namely, at the Jackson Laboratory, and that you believe the Frigidaire people have arranged for this meeting in order to transfer such research work to us and to discuss the present status with that idea in mind.

We have been investigating three different processes of manufacture which may be described briefly as, first - the reaction between fluorspar and carbon tetra-chloride directly; second - the reaction between phosgene and silicon tetra-fluoride and third - the simultaneous addition of hydrofluoric acid and carbon tetra-chloride to antimony pentachloride as a catalyst.

Of these three, the latter which most resembles the process which has been used at Dayton and which is still substantially different from that process, seems now to be much the most promising. We believe it is developed to a point where we should commence to construct a semi-works plant at the Dye Works, using this process. I understand that you thought you wanted about 600 pounds per day for your development work and believe that this semi-works plant should have such a capacity. Of course, it might be possible to build the semi-works plant a little smaller and continue simultaneous manufacture at Dayton to produce 600 pounds from both plants but it seems to me that this would be un-economical.

A plant which could produce 600 pounds per day, running three shifts, would probably cost about \$40,000, including a building. We have a building in which we might install the equipment in our semi-works area but this building is an old frame one which is not very suitable and since, presumably, experimental work on the manufacture of F-12 and allied products is going to continue for a long time, I feel it would be advisable to erect a new, substantial building for this purpose.

We got the impression that Frigidaire did not expect to adopt F-12 for their refrigerators on any commercial scale until they were prepared to use F-12 exclusively for their entire production. I think it was Mr. Williams who made this

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Page No. 2

Mr. John L. Pratt

6-26-50

statement. Of course, I am not referring to the production of a relatively small number of machines for development purposes only. If this program is correct, it seems to me that the sooner we get started with this semi-works plant, the sooner we will be able to exploit the preposition on a commercial scale. We might by further delay, of course, learn more about the best method of manufacture but I do not believe that such further delay is advisable.

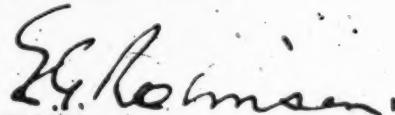
With regard to F-21 on which the Dayton Plant has been working over since our Mr. Laird went out there, I do not know anything officially about the plans. Apparently the manufacture of this compound requires considerable study, which we are working on at the Jackson Laboratory. I believe that if we can work out the manufacture of F-21 from the by-product F-11 obtained in the manufacture of F-12, we should include in our semi-works plant also the equipment for this step.

One reason for proposing that the plant at semi-works be large enough to produce 600 pounds of F-12 and the F-21 you will need is so that we can bring Mr. Laird back to run that plant when it is completed.

I would be glad to have your comments on this program and particularly advice as to what quantities of F-21 you expect to require.

I am sending you two copies of this letter, since I thought you might possibly want to send one to Mr. Biechler.

Very truly yours,



E. G. ROBINSON,
GENERAL MANAGER

EGR/LPL

4986

June 26, 1930

Mr. E. G. Biechler, General Mgr.,
Frigidaire Corporation,
Dayton, Ohio.

Dear Mr. Biechler:

I was talking with Mr. Robinson, of the DuPont Company, over the phone this morning, about our new refrigerating gas company, regarding which I have had some correspondence with him relative to working out a final agreement for the organization of this company. He told me that good progress is being made along this line.

He mentioned to me that Mr. Williams had asked some of the DuPont men to come out to Dayton to discuss research work. I do not know what phase of the research work Mr. Williams wishes to take up, but my own reaction is that we should lead on to the DuPont Company as soon as possible all research work in regard to processes of manufacture. Any work on research that Frigidaire or General Motors may do should apply to research for purposes of development of additional uses of the gas than refrigeration.

If you agree with me on this I would suggest that you see that Mr. Williams is in harmony with our viewpoint.

Very truly yours,

Vice President

JEP:V

2706

June 24, 1930

Re: Progress Report on Fluorides.

June 25, 1930, there was a meeting in Dayton, Ohio, at the general offices of the Frigidaire Corporation of the following men:

From duPont, Wilmington, Dela.
Dr. Elley, Mr. Calcott.

From General Motors Research, Detroit, Mich.
Mr. Lovell, Mr. Kramer.

From Frigidaire, and those directly connected with Frigidaire.

Messrs. Midgley, Henne, Williams, Warring, Laird, Buffington, Gibson, and Morrison; in the afternoon,
Mr. Candor.

The purpose of the meeting was educational for all parties working on the fluorine compound, to summarize the work done in the different organizations, and plan for the future.

The different organizations gave the methods of preparation of fluorine compound which they had tried and which they had put down on paper without making trials, and their experience in handling the chemicals, and Dr. Elley summarized these and his original notes, signed by Dr. Elley and Mr. Midgley, are in the Frigidaire files attached to a memorandum which Mr. Candor wrote. Dr. Elley took with him two (2) photocopies of these notes.

At a meeting to be held later in Wilmington, at the call of duPont men, Mr. Henne, Mr. Candor, Mr. Morrison, and anyone else Mr. Fehr thinks should be present will meet with the Wilmington people to sort out the inventions and decide what applications now on file by Frigidaire.

A list of possible uses under broad headings was made and this list is also attached to Mr. Candor's memorandum. Each group represented at the meeting took a copy of the list for further study.

General Motors Research will stop active work on production methods and devote their time to finding more gas detectors for leaks.

The new company is to be formed within about two weeks and at that time a more definite program can be set up as to work to be done and by whom. In the meantime, all process operations are to be centralized at duPont and they are to put as many men on this work as seems necessary in view of the program. All suggestions which come to any of the parties as to new processes or variations of processes will be sent to Dr. Elley. The party making the suggestion is free to work on the process if he so desires, but this is not obligatory.

All suggestions for new uses are centered in Dr. Henne for the time being, and also all requests for samples of material will be sent

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to Al Henne and the latter will be handled in conjunction with the Frigidaire Patent Department.

Dr. Buffington will continue his work on determining the constants of the various chemicals, such as the boiling point and vapor pressure curves, and will pursue these to conclusion. However, for the benefit of the various parties working on these chemicals he will make a preliminary report so as to give them the advantage of his work to date.

duPont are to carry on an analytical study of processes and Dr. Laird will continue his study of control work on the processes because he now has a plant in operation where he can make a control study.

A more definite program will be expected when the new company is formed, but it is expected that duPont people will have the advantage of the advice of Al Henne and Mr. Midgley on any point on which they want to consult them so as not to lose advantage of their experience.

The summaries of processes and uses is made for the guidance of all parties and is not intended as merely a statement of inventions made at the meeting.

Copies of all Frigidaire applications were brought into the meeting and a general statement given to Dr. Elley of what each covered but time was not taken then to read them over in detail.

J. W. Morrison
Patent Section
General Technical Committee

Government's Exhibit No. 846

June 28, 1930

MEMORANDUM

A meeting was held on Wednesday, June 25, at the Frigidaire Corporation, to discuss matters pertaining to organic fluorides. The following people were present at this meeting: Messrs. Midgley and Henne (Frigidaire Corporation), Elley and Calcott, (E.I. duPont deNemours & Co.), Lowell and Cramer (General Motors Research Laboratories), Morrison (General Motors Legal Department), Candor, (Frigidaire Patent Department), Buffington, Waring, Gibson, Laird, and Williams, (Frigidaire Corporation).

The object of this meeting was to discuss methods of manufacture, particularly of F-12, to eliminate possible duplication of effort in the study and development of methods, and to plan a clearing house of information on methods, applications, and properties.

It was decided that all methods would be cleared through Dr. H. W. Elley, of the E. I. duPont deNemours & Company, Wilmington, Delaware.

Applications will be cleared through Dr. A. L. Henne, of the Frigidaire Corporation, Dayton, Ohio.

The physical properties will be cleared through Dr. R. M. Buffington, Frigidaire Corporation, Dayton, Ohio.

The toxic properties will be cleared through Dr. R. A. Kehoe of the University of Cincinnati, Cincinnati, Ohio.

During the latter part of the meeting a detailed discussion took place of the reactions entering into the manufacture of organic fluorides. This discussion involved not only the chemistry, but the patent applications as well. A list of possible applications was also prepared and turned over to Dr. Henne. It was decided that the work on analytical control methods would be worked out by the Jackson Laboratory of the duPont Company.

Dectectors were discussed and it was decided to do further work on them.

H. M. Williams
Manager - Research and
Future Demands Division.

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FRIGIDAIRE CORPORATION

SUBSIDIARY OF GENERAL MOTORS CORPORATION

DAYTON, OHIO, U.S.A.

OFFICE OF
PRESIDENT AND GENERAL MANAGER

July 25, 1930

Mr. J. L. Pratt, Vice President,
General Motors Corporation,
New York City.

Dear Mr. Pratt:-

We were very glad, as I indicated to you in my letter of July 23, for the opportunity of reviewing the proposed agreement between General Motors Corporation and the duPont Company, and we have given it considerable attention. We have had a meeting with Mr. Morrison, Mr. Middley, Mr. Williams and Mr. Fehr, and as I stated to you over the telephone this morning, we have rewritten the agreement to conform with the ideas of the group mentioned above. In doing this, we realize that you have certain reasons why you may want the original agreement to stand, but we, nevertheless, took full advantage of your suggestion, and therefore, did not hesitate to make the changes enumerated in the revised agreement.

Dealing specifically with the questions asked in your letter, would say that under the definition "said products", we have reworded this to conform with what we believe is a better description.

Relative to the original Clause #10, which is Clause #10 in the revised agreement, we are in position to do what this paragraph outlines.

Relative to Clause #12, if enough money was not earned to pay the duPont fee, our royalty could be modified, as suggested, although we cover this in somewhat different fashion in the revision of Clause #12.

In connection with Clause #13, which is also included in the revised #12, we suggested that the royalties be paid until the end of the life of any patent dominating a product.

I understand your reasons why you feel duPont should have 51% of the stock, and also why you feel the royalty should be held down to a minimum. We are wholeheartedly in accord with keeping the agreement in accordance with the original, that is on-a 51-49 basis, but we do feel since Frigidaire is such an important factor in this whole refrigerant subject, and since we feel it is very fundamental, new and beneficial refrigerant, that we are entitled to as much royalty as possible. I realize, however, that whatever profits are made will redound to the credit of General Motors; so we would not hold out unduly on this subject.

I am sure you understand the spirit in which we send in our revised copy of the agreement.

EGB/CL

James G. Schaefer
James G. Schaefer

C
2710

CORRECTED COPY

10011

GENERAL MOTORS CORPORATION
ADVICE OF ACTION

To: Mr. J. L. Pratt

Date August 12, 1930 192

Subject: Manufacture of Fluorine Gas

You are hereby notified of action taken as follows:

By (Committee or Body) Executive Committee

Place of Meeting New York

Date of Meeting August 8, 1930 192

Mr. Pratt brought up the question of making a contract with the DuPont Company whereby we become joint owners with them of a company to be organized for the manufacture of certain compounds of fluorine which have been developed by our Research Laboratories. These compounds are particularly desirable for use in electric refrigeration.

On motion the Committee unanimously authorized Mr. Pratt to make the proposed contract with the DuPont Company.

Zo Smith
Signature
Secretary

NOTE: An illegible hand written signature appears in the lower right hand corner.

2711

AGREEMENT entered into on the *27th day of August* 1930, between GENERAL MOTORS CORPORATION, a corporation of the State of Delaware, hereinafter referred to as General, and E. I. du PONT de NEMOURS & COMPANY, also a Delaware corporation, hereinafter referred to as DuPont.

WITNESSETH:

WHEREAS DuPont is extensively engaged in the business of manufacturing various chemicals, and among others, certain chemicals used in mechanical refrigeration, and

WHEREAS General, and its subsidiary, The Frigidaire Corporation, have developed certain chemicals containing Fluorine which the parties hereto believe will be useful as refrigerants, and

WHEREAS DuPont at the request of General has, prior to the date hereof, conducted various researches and experiments pertaining to the manufacture of such Fluorine compounds, and

WHEREAS the parties hereto desire to cooperate in the development of the business of manufacturing and selling such Fluorine compounds and other chemicals in the manner and upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the premises and of the mutual covenants herein, they have agreed and by these presents do agree with each other as follows:

FIRST: The term "said products" as hereinafter referred to, to be manufactured and/or sold by the New Company, as herein provided, shall be deemed and considered to mean:

(a) Halogenated Hydrocarbons containing at least one Fluorine atom.

NOTE: Italics indicate handwriting.

(2713)

(b) Fluorine compounds used or intended to be used in motor fuels.

SECOND: Promptly upon the execution hereof a corporation shall be formed under the laws of the State of Delaware, which corporation shall be named KINETIC CHEMICALS, INC., and shall have

a total authorized capital stock consisting of twenty thousand (20,000) shares, with a par value of One Hundred Dollars (\$100.00) per share, such corporation being hereafter referred to as the New Company.

THIRD: Upon the organization of the New Company, DuPont shall subscribe for fifty one percent (51%) of said total authorized capital stock and General shall subscribe for forty nine percent (49%) thereof; which subscriptions shall be payable at par in cash to the New Company from time to time at such times and in such amounts as the Board of Directors of the New Company shall determine.

FOURTH: The New Company shall have such powers as shall be necessary and/or adequate to enable it to engage in the manufacture and sale of the "said products," and to carry out the purposes and intention of this agreement.

FIFTH: The officers of the New Company shall be a President, one or more Vice-Presidents, Treasurer and Secretary, with such Assistants as the Board of Directors of the New Company may determine to be necessary or requisite.

SIXTH: The Board of Directors of the New Company shall be composed of five (5) members to be elected by cumulative voting under a charter provision providing for the same.

(2713)

SEVENTH: As soon as the New Company has been organized and the first calls on the subscriptions of the parties hereto to its capital stock have been paid, the New Company shall engage in the manufacture and sale of the "said products," it being understood and agreed that for the time being said New Company shall operate the semi-commercial plant owned by The Frigidaire Corporation at Morain City, Ohio, which operation shall be carried on at the cost and expense of the New Company, and shall be continued for such time as the Board of Directors of the New Company shall determine; it being further agreed

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that future chemical developments, (other than those relating to "said products") originating in the laboratories of General, or its subsidiaries, shall be offered by General to the New Company on such terms as may be mutually agreed upon, and if after six months the New Company shall elect not to exploit such new chemical developments, then General shall be free to dispose of the same elsewhere.

EIGHTH: DuPont agrees with respect only to the production of "said products" specified in Paragraph FIRST, that it will be responsible for the management of the New Company and will make available to it the benefit of DuPont's experience in and knowledge of the manufacture and sale of chemicals, for which the New Company will pay DuPont a fee of Fifty Thousand Dollars (\$50,000) a year for a period of five years beginning January 1, 1931; it being understood and agreed however, that if in any of these years, other than the year 1931, the net profits of the

NOTE. Pencilled note "6-26-45 Cancelled per attached JCD" is appended at mark before "it being further agreed" in middle of Paragraph SEVENTH with closing mark at end of paragraph.

New Company are insufficient to pay in full this fee and the royalty to Frigidaire as specified in Paragraph TWELFTH, then the fee payable for that year shall be determined as prescribed in Paragraph FOURTEENTH. The fee for any year shall be due and payable on January 25th of the year following, or as soon thereafter as the accounting for the year's operations is completed and the amount of fee has been definitely determined.

NINTH: The fee specified shall be full compensation to DuPont for making available to the New Company DuPont's experience in and knowledge of the manufacture and sale of chemicals, all as specified in Paragraph EIGHTH, except that the New Company will reimburse DuPont for travelling and living expenses of DuPont employees while away from home and engaged in the service of the New Company. In addition, the New Company shall pay the salaries of DuPont employees directly assigned to and/or temporarily engaged in service, other than that referred to in Paragraph EIGHTH

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and shall pay the travelling and living expenses of such employees should their duties require them to be away from home in the service of the New Company, and the New Company shall pay to DuPont its distributable cost for such services as the New Company may request of DuPont's auxiliary service departments, such as Purchasing and Traffic, Engineering, Service, Legal, Development, Chemical, Accounting, etc.

TENTH: General shall cause its subsidiary, The Frigidaire Corporation, promptly upon the execution of this agreement to grant to the New Company an exclusive license (subject to a right to be retained by Frigidaire for the use only of Frigidaire or of any other wholly owned subsidiary

of General Motors in refrigeration) to manufacture, use and sell "said products" under all patents or applications for Letters Patent, whether issued or applied for, in the United States and/or foreign countries at the date hereof, or which may hereafter be issued or applied for in said United States and/or foreign countries by General or by the said The Frigidaire Corporation, as well as under all inventions and/or processes on which no applications have been filed; it being understood that the obligation of said The Frigidaire Corporation under this Paragraph shall extend to and include all inventions, processes, patents and applications pertaining to the "said products", in so far as said The Frigidaire Corporation shall have a right to dispose of the same, subject, however, to any rights heretofore granted to the Ethyl Gasoline Corporation under that certain agreement with General dated August 28th, 1924, and particularly to Paragraph 10 thereof attached hereto and marked Exhibit "A"; it being understood that the provisions of Paragraph 10 are interpreted to include compounds for the removal of carbon from engine cylinders and apparatus for applying such compounds; it being further understood and agreed that said license shall be substantially in the form attached hereto, made a part hereof and marked Exhibit "B".

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ELEVENTH: DuPont shall transfer and assign to the New Company all patents and/or processes arising out of research and development work pertaining to the "said products" carried on at the request of the New Company, General or The Frigidaire Corporation, and the expense of such development or research work shall be borne entirely by the New Company, and if DuPont shall now or at any time hereafter own or control any process or patent other than aforesaid, pertaining to the manufacture and use of

any of "said products", then DuPont shall without cost or expense to the New Company grant to the New Company an exclusive license to manufacture, use and sell "said products" under any such patent or process for use in mechanical operations where volatility is a factor, or for use as solvents, but nothing contained herein shall require DuPont to grant to the New Company a free license under said new processes or patents for any other uses, provided, however, that if DuPont shall at its own expense develop any such processes for uses other than those aforesaid and the New Company shall then or thereafter desire to use any such patent or process in the manufacture of "said products", then and in that event a license shall be granted with respect to the same which shall be upon a reasonable basis of compensation.

TWELFTH. It is agreed that the license to the New Company under the inventions, processes, patents and patent rights of the General Motors Corporation, and/or The Frigidaire Corporation, hereinabove referred to, shall be upon the condition and understanding that the New Company shall pay to The Frigidaire Corporation a royalty equal to five percent (5%) of the selling price of all "said products" manufactured and sold by the New Company under said patents beginning with January first 1931, except on sales to the Ethyl Gasoline Corporation, which royalties shall be determined after freight and cash discounts have been deducted, it being understood that if, in any one of the calendar years 1932 to 1935 inclusive, the net profits of the New Company are insufficient to pay in full this royalty and the fee to DuPont as specified in Paragraph EIGHTH, then the royalty payable for that year shall be determined as prescribed in Paragraph FOURTEENTH.

The royalty for any year shall be due and payable on January 25th of the year following, or as soon thereafter as the accounting for the year's operations is completed and the amount of royalty has been definitely determined; it being understood and agreed always that nothing contained in this Paragraph shall adversely affect the rights of the Ethyl Gasoline Corporation under General Motors Fuel Patents, under which rights the said Ethyl Gasoline Corporation is released from the payment of royalties to Frigidaire or to the New Company with respect to any products to be used as ingredients of motor fuels.

THIRTEENTH: The New Company shall charge all users of the "said products"; other than Frigidaire, a license fee for each machine in which the same shall be used as refrigerants.

FOURTEENTH: It is the intent of Paragraph EIGHTH that DuPont shall be paid the fee of Fifty Thousand Dollars (\$50,000) in full for the year 1931, and it is the intent of Paragraph TWELFTH that Frigidaire shall be paid the royalty calculated, with respect to the year 1931. For the years 1932 to 1935 inclusive, in the event that the net profits of the New Company determined before fee and royalty, but after deduction for taxes calculated after giving effect to fee and royalty which may be payable, are insufficient to meet the royalty and fee in full, then such net earnings as are available shall be paid to Frigidaire and DuPont respectively as royalty and fee in the proportion that the royalties earned as calculated in accordance with Paragraph TWELFTH, and the fee of Fifty Thousand Dollars (\$50,000.) in accordance with Paragraph EIGHTH, bear to the sum of these two figures.

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FIFTEENTH: The royalty of five percent (5%) payable to The Frigidaire Corporation, and referred to in Paragraph TWELFTH, shall be payable for a period of seventeen years beginning January 1, 1931, provided however that if at the end of five years from the date hereof, a patent or patents have not been issued which give the New Company practically a commercial monopoly in the production or use of "said products" or if any of said patents when granted shall be declared invalid to such an extent

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that the New Company does not have practically a commercial monopoly in the production or use of "said products", then such royalty shall cease and terminate; to be revived (for the remainder of said seventeen years period), when such patent or patents shall have been granted, or the validity of the same shall be later and finally established.

SIXTEENTH: It is agreed that DuPont shall be reimbursed by the New Company for the cost of any and all research or experimental work carried on by DuPont with reference to "said products" prior to the time that the New Company shall commence to function as a going concern, and thereafter both DuPont and General shall be reimbursed for any and all research or experimental work conducted at the request of the New Company.

SEVENTEENTH: If throughout the calendar year of 1936, or throughout any calendar year thereafter, General and/or its wholly owned subsidiaries shall be the sole purchaser or purchasers from the New Company of the "said products" for refrigerating purposes, then the New Company will, at the request of General, grant to General a non-exclusive assignable license under all patents or inventions

under which rights have theretofore been granted by General or The Frigidaire Corporation to the New Company to the end that General or any of its wholly owned subsidiaries may purchase the "said products" for refrigerating purposes from sources other than the New Company; the provisions of this paragraph however shall not be operative unless during the period above referred to the New Company shall have had sufficient capacity over and above purchases of The Frigidaire Corporation to supply other customers.

EIGHTEENTH: Neither DuPont nor General will sell, pledge or otherwise dispose of any of their stock in the New Company without first offering such stock to the other and giving to the other fifteen days to purchase the same at a price and upon terms at least as favorable as the price and terms at which it is intended to dispose of such stock, and if a disposition to a third party is not effected at such price and terms within

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forty-five days after the expiration of such fifteen days, then the stock may not be disposed of without again offering the same as hereinabove provided.

NINETEENTH: In the event of any dispute under this agreement arising between the parties, which the parties are unable to adjust between themselves, it shall be settled by arbitration pursuant to the Arbitration Law of the State of New York in the following manner: Either party to such dispute shall make a demand for arbitration by notice in writing served upon the other party to the dispute, stating the substance of the dispute and the contentions of the party making the demand. Within thirty days after such service of demand for arbitration, the parties to such dispute shall

agree upon an arbitrator. In the event of the failure of the parties to agree upon an arbitrator as above provided, either of the parties may make application to the Chamber of Commerce of the State of New York to designate and appoint an arbitrator as provided by said Arbitration Law. The dispute shall be submitted to the arbitrator in such manner as he shall direct, and his decision rendered in writing shall be final and conclusive and binding upon both parties to such dispute. Each party shall pay its own expenses in connection with the arbitration, but the compensation and expenses of the arbitrator shall be borne in such manner as may be specified in his decision in writing.

IN WITNESS WHEREOF the parties hereto have caused this agreement to be executed by their officers, duly authorized, and their respective corporate seals to be hereunto affixed on the day and year above written.

GENERAL MOTORS CORPORATION,

By *J. L. Pratt*

V. P.

ATTEST:

(Signature Illegible)

Ass't Secretary

Approved
as to form
C. M. Spargo
WMJ.

E. I. DU PONT DE NEMOURS & COMPANY,

By *W. F. Harrington*

V. P.

ATTEST:

M. D. Fisher

Ass't Secretary

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NOTE: Italics indicate handwriting.

PARAGRAPH 10 FROM GENERAL MOTORS CORPORATION AND
ETHYL GASOLINE CORPORATION AGREEMENT,
DATED AUGUST 28, 1924

10. The license herein granted shall also extend to any Letters Patent of the United States or of any foreign country, which may in the future issue to or be acquired by GENERAL MOTORS and/or the RESEARCH COMPANY and/or any corporation owned by GENERAL MOTORS, for an invention which is made before August 1, 1940, and which invention relates to or consists in or comprises:

- (a) Any substance which, added to the explosive charge of an internal combustion engine in minute proportions as compared with the fuel, has an effect in preventing detonation which is equivalent to the effect produced by the addition of lead tetraethyl to present navy specification gasoline from Pennsylvania crude oil in the proportion of three cubic centimeters per gallon of gasoline;
- (b) Any composition or anti-knock mixture including the substance defined in Paragraph (a) as its effective detonation-suppressing agent and one or more other constituents having auxiliary utility;
- (c) Any method or process for manufacturing or using the substance defined in Paragraph (a) or the mixture defined in Paragraph (b),—(not including however processes for the manufacture or refining of petroleum oil or of secondary alcohols from the unsaturated hydrocarbons of petroleum oil or products of refining of the same);
- (d) Any equipment or apparatus for use in manufacturing, mixing or dispensing the substance defined

in Paragraph (a) or the mixture defined in Paragraph (b).

It is expressly agreed that the ETHYL COMPANY shall not be obligated to pay any royalties for or on account of the license granted in this Paragraph, payment of royalties being limited to the license granted in Paragraph "2" hereof.

EXHIBIT A

EXHIBIT "B"

AGREEMENT entered into on the day of
1930, by and between THE FRIGIDAIRE COR-
PORATION, a corporation of the State of Delaware, herein-
after referred to as the Licensor, and KINETIC CHEMICALS,
INC., a corporation of the State of Delaware, hereinafter
referred to as the Licensee.

WHEREAS the Licensor is the owner of inventions forming
the subject matter of applications for Letters Patent
listed below, together with corresponding applications for
foreign patents also listed below and other inventions, upon
which applications have not yet been filed, all of which
relate to

- (a) Halogenated hydrocarbons containing at least
one Fluorine atom.
- (b) Fluorine compounds used or intended to be used
in motor fuel.

which are termed herein "said products"

APPLICATIONS

COUNTRY	TITLE	SERIAL NO.	FILING DATE
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NOW, THEREFORE, pursuant to an agreement made be-
tween General Motors Corporation and E. I. duPont de

Nemours & Company on the day of August, 1930, and for other considerations, the receipt and sufficiency of which are hereby acknowledged by the Licenser, the parties hereto have agreed and do agree with each other as follows:

FIRST: The Licenser does hereby give and grant to the Licensee a license to make, use and sell the "said products" under all of the foregoing patents and applications for patents, which license shall be exclusive with the exception that the Licenser hereby expressly reserves for itself and General Motors Corporation the right to use any and all of the "said products" as refrigerants in their own business, but not otherwise.

SECOND: The Licensee agrees to pay to the Licenser in consideration of the foregoing license a royalty which shall equal five percent (5%) of the selling price of all of "said products" manufactured and sold by the Licensee, which royalties shall be determined after freight and cash discounts have been deducted; it being understood and agreed that if, in any one of the calendar years 1932 to 1935, inclusive, the net profits of the Licensee shall be insufficient to pay said royalties in full, together with payments due to E. I. duPont de Nemours & Company in accordance with the agreement between E. I. duPont de Nemours & Company and General Motors Corporation dated the day of August, 1930, then said royalties shall be fixed and determined in accordance with said agreement.

THIRD: Nothing contained in this license shall permit the Licensee to charge a royalty on any of "said products" sold by the Licensee to the Ethyl Gasoline Corporation for

use in motor fuels, or shall obligate the Licensee to pay the Licenser a royalty on such sales.

- **FOURTH:** The royalties hereinabove provided shall be payable by the Licensee to the Licenser for a period of seventeen (17) years, beginning January 1, 1931; provided, however, that if at the end of five (5) years from the date hereof a patent or patents have not been issued which give the New Company practically a commercial monopoly in the production or use of the products intended to be covered thereby, then such royalty shall cease and terminate, to be revived, for the balance of said seventeen (17) year period when such patent or patents shall have been granted; provided further if the patents dominating the use and/or the process of manufacturing "said products" shall be declared invalid by a Lower Court from which no appeal is taken,

—2—

or by a Court of Last Resort so that the Licensee is without sufficient Patent protection to give it the practically commercial monopoly referred to above in any country the royalties shall cease and determine for such country until such time as the Licenser shall reestablish dominating patent rights by further litigation or other appropriate means, in which event all back royalties shall at once become due and royalties shall be payable on future sales as herein provided.

FIFTH: The royalties payable hereunder for any year shall be due and payable on January 25th of the year following, or as soon thereafter as the accounting for the year's operations is completed and the amount of royalty has been definitely determined.

(2726)

SIXTH: The Licensor agrees that it will be diligent in the prosecution of infringers under the patents herein referred to, and that it will bear all of the cost and expense arising out of any litigations, suits or actions based on or arising out of the prosecution or defense of the rights of either of the parties hereto under any or all of the foregoing patents; in which event all moneys recovered by the Licensor in any such litigation shall be its sole and exclusive property.

IN WITNESS WHEREOF the parties hereto have caused this agreement to be executed by their officers, duly authorized, and their respective corporate seals to be hereunto affixed, on the day and year first above written.

THE FRIGIDAIRE CORPORATION,

ATTEST:

By

.....

KINETIC CHEMICALS, INC.,

ATTEST:

By

.....

-3-

(2727)

5008

GENERAL MOTORS CORPORATION
Broadway at 57th Street
New York, N. Y.

February 9, 1932.

E. I. duPont de Nemours & Company
Wilmington, Delaware.

Dear Sirs:

With reference to the agreement entered into on August 27th, 1930, between this corporation and you, relating to the development of the business of manufacturing and selling fluorine compounds and other chemicals, you are advised that it seems desirable that Article THIRTEENTH which reads,

"The new company shall charge all users of the 'said products', other than Frigidaire, a license fee for each machine in which the same shall be used as refrigerants,"

be amended, effective today, to read,

"The new company may charge users of the 'said products', other than Frigidaire, a license fee for each machine in which the same shall be used as refrigerants,"

This corporation is desirous of so amending Article THIRTEENTH, and if such amendment is agreeable to you, will you kindly note your acceptance on the bottom of this letter.

Very truly yours,

(Signed) JOHN T. SMITH

Vice President.

HMH/AMH

ACCEPTED this 9th day of February, 1932.

E. I. duPont de Nemours & Company

By (Signed) W. P. HARRINGTON
Vice President.

O.K.
W.P.
Log. Dept.
Q.C.R.

(2728)

5009

October 10, 1931

Mr. W. F. Harrington, Vice President,
E.I. duPont deNemours & Company,
Wilmington, Delaware.

Dear Buck:

I wish to thank you for your note of October 6th,
in regard to Lithium Chloride.

In order that you may have a little atmosphere on
this subject, I would like to tell you confidentially that
we are working on an air conditioning system which involves
the use of Lithium Chloride. If this system is acceptable
it will require about 600 pounds of Lithium for the average
home. If we are able to sell 1,000 of these systems a year
it will mean 600,000 pounds of Lithium. 5,000 systems will
mean 3,000,000 pounds.

According to the best information we have, the total Lithium
production is now in the hands of the Maywood Chemical Company,
who are able to produce about 1,200,000 pounds per year. Our
people some time ago attempted to get some Lithium compound
from your R. & H. Company. R. & H. Company I believe acts
somewhat as a selling agent for Maywood, and of course if we
were going to have to deal solely with Maywood there would be
nothing gained by going through one of your subsidiaries to
purchase the material. Our people have a direct contact with
Maywood.

The thing we do not like to do is develop an industry
which may take several times the amount of a given material that
is now being produced and have only one source for that material.
In approaching you we are hoping to be able to develop a second
source for the material. Some of our people feel that we
ourselves should go ahead and develop this source. Personally,
I would rather depend upon the duPont Company for our chemical
developments than for us to start an independent development of
our own. It was my idea that in organizing Kinetic Chemicals
we could put all of our developments in that company, but it
does not strike me that we ought to complicate the Kinetic picture
by asking them to develop Lithium Chloride.

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Mr. W. F. Harrington - 2.

We will probably have to know within the next four or five months just what we are going to do on the subject, and in the meantime I would appreciate if you would have your people in Gyasselli make an investigation and see whether the production of Lithium Chloride is an industry in which you would be interested.

With kind personal regards,

Very truly yours,

Vice President

JLP:V

(2725)

KENETIC CHEMICALS, INC.
DU PONT BUILDING
WILMINGTON, DELAWARE

5011

September 8, 1938

MR. R. C. ROBINSON, PRESIDENT
BUILDING

SUBJECT: "FREON-114" SITUATION

It has recently been forcibly brought to our attention that there is a market for between 800,000 and 1,000,000 pounds per year of "Freon-114" which can be captured in its entirety during or before the year 1940.

The Sunbeam Manufacturing Company of Evansville, Indiana, who manufacture the units for Sears & Roebuck, are determined that they shall have "Freon-114" for use in these units. They state that they will consume from 500,000 to 750,000 pounds of "Freon-114" per year, but I am estimating their requirements at the lower figure.

A check-up throughout the United States which has recently been made confirms the statement which General Wood made to our Mr. W. F. Harrington, i.e. that Sears & Roebuck sell more electrical refrigerators than any other concern with the exception of Frigidaire. At the time this statement was made I took exception to it, but we now have every reason to believe that it is true.

The second customer who will use "Freon-114" immediately when it is released is the Norge Corporation, a division of the Borg-Warner Company. They should consume 250,000 pounds of "Freon-114" per year as their refrigerator is very popular with the public.

The third concern is Landers, Frary, & Clark of Bridgeport, Connecticut, whose minimum consumption should run around 50,000 pounds per year.

All of these companies are now making the rotary type of compressor in which "Freon-12" is unsuccessful. "Freon-11" would cause them to increase the size of their compressor and the cost of the machine would be excessive. "Freon-21" can be used, but in our opinion, is a poor refrigerant, a costly one to manufacture, and we have no plant for making it.

Frigidaire will not permit "Freon-114" to be sold to independent service people and, as a result, these people are seeking for some substitute. Mr. Harry Edwards telephoned our Mr. Zeisberg and says there is a demand being made upon them to sell Isobutanol for use instead of "Freon-114" in these machines. "Freon-114" boils at 38.4° Fahrenheit and commercial Isobutanol between 38 and 40°.

We have a plant capable of making all the "Freon-114" which is needed by these people and also caring for the needs of the Frigidaire Corporation. This plant is idle and the business showing small return on the investment compared with the "Freon-12" business. The figures which we have show that there should be an increase of 5¢ per pound in "Freon-114" price to the Frigidaire Corporation in order

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to show a satisfactory return on the investment.

The greatest argument for the release of "Freon-114" for general sale at this time is the question of monopoly. The monopoly enjoyed by Frigidaire is seriously damaging the business of these other parties. By our advertising and through the general acceptance of the "Freon" refrigerants, there is now an active demand for electric refrigerators filled with them. This being the case, Sunbeam, Norge, and Landers, Frary, & Clark feel themselves at a disadvantage in offering sulphur dioxide refrigerators.

The Du Pont Company, I know, is very sensitive to the monopoly feature and something ought to be done to correct this situation for the good of Kinetic's business and the betterment of the whole situation. Frigidaire has had this monopoly for several years and has secured all the credit that will come to anyone for the introduction of "Freon-114". They should be willing now to let others follow in their footsteps.

If we could sell "Freon-114" generally and the above-mentioned concerns took it on, it would force the General Electric Company to put "Freon-12" into their units and this would mean another million pounds of "Freon-12" business per year.

There is a great deal of profit at stake here beside a very important point of policy and I feel sure that if Mr. Alfred Sloan were to know of the situation that exists today, he would not longer desire us to reserve "Freon-114" for the General Motors Corporation alone.

I did not take up the price of "Freon-114" with Mr. Biechler on the last visit as the time was not opportune. I hope you will do something today in conjunction with this other question, and I am sincerely hoping that for the healthy growth of our business, Mr. Biechler will be satisfied to give up the slight advantage that he now has in monopolizing the "Freon-114" output.

W.W.Thodes
SALES DIRECTOR

WWR:AS

(2731)

KINETIC CHEMICALS, INC.
DU PONT BUILDING
WILMINGTON, DELAWARE

5013

September 12, 1938

~~MR. E. G. ROBINSON, PRESIDENT
KINETIC CHEMICALS, INC.
BUILDING~~

SUBJECT: CONFERENCE WITH DR. A. J. SNOW OF
SEARS-ROEBUCK ON SEPTEMBER 9, 1938,
AT DUPONT OFFICES IN EMPIRE STATE
BUILDING, NEW YORK CITY

Dr. Snow's Position with Sears-Roebuck

Dr. Snow informed us that he is a special advisor to the Merchandising Managers of Sears-Roebuck, Inc. He acts in this capacity for all Merchandising Managers. It would seem to me from his description of his activities that his position corresponds to the Director of our Development Department. Dr. Snow's degree is in psychology.

Snow's Contacts with DuPont Company

Dr. Snow cooperated with our Mr. Streeter during the development of Dulux for electric refrigerators. He is a great friend of Mr. Streeter and lives but a short distance from him in Chicago. Sometime ago Dr. Snow spent an entire week in Wilmington meeting different members of the DuPont organization. He was introduced to Mr. Lamont DuPont, Dr. Stine, Mr. W.A. Hart, and others. Mr. William Richter saw that he was taken about and shown everything.

Monopoly

During this visit of Dr. Snow's to Wilmington, he requested the DuPont Company to manufacture the grade of Dulux which they were using exclusively for Sears-Roebuck, but was informed by Dr. Stine that it is against the policy of the DuPont Company to grant such monopolies to any party. This policy was also enunciated by Mr. Streeter. Consequently when he found that Sears-Roebuck could not obtain "Freon-114" from us, he was very much surprised and could not credit the information.

Formation of Sunbeam Electric Company

When Sears-Roebuck decided to go into the business of selling electric refrigerators, they approached the Frigidaire Corporation and asked them to manufacture these refrigerators for them, but Frigidaire did not think that it was advisable for Sears-Roebuck to enter this field and eventually refused to accede to their request. Dr. Snow then approached the General Electric Company, Westinghouse, and Kelvinator and the decision was the same in every case. An inventor came to Sears-Roebuck with a unit which was probably not of the best design but satisfactory, and they decided to take over this unit and manufacture it.

5014

They found a plant at Evansville, Indiana which was making headlights for locomotives. The plant had been shut up for some years because there were no orders for locomotive headlights. It, however, afforded them the floor space they needed and they made a proposal to the owner by which he received about 20% of the stock of the Sunbeam Electric Company. The inventor and others received stock equivalent to 50% of the entire issue. Sears-Roebuck retained for themselves 50% of the issue. A few months after the organization of this company the stock could have been bought in Evansville for \$50 a share. In the year 1937 dividends amounting to \$300.00 a share were paid on the stock.

Growth of the Business

The first year that Sears-Roebuck sold the Goldspot electric refrigerator (year undisclosed) they sold only 19,000 units. In the year 1937 they merchandised 329,000 units. Their business during 1938 is only 15% below 1937 figures, and given a normal year, they are sure that their business will again increase. Dr. Snow claims that they are second only to Frigidaire in the numbers of domestic units which are being sold. Some months ago when our Mr. Harrington told us how large Sunbeam had grown, I could not credit the fact that their business was of this magnitude. Subsequently a check-up in every direction shows that they are as large as they claim to be.

Estimate of Consumption of "Freon-114"

My estimate of 500,000 pounds yearly as the estimate of the consumption of Sunbeam hit the nail right on the head. Dr. Snow says they are using approximately 500,000 pounds of refrigerant yearly.

Need for "Freon-114"

The engineers of the Sunbeam Electric Company tell Dr. Snow that they must have "Freon-114" as this refrigerant is exactly what they require for their machines. They feel that the compressor will be more efficient if "Freon-114" is used in it and they will not consider the use of either "Freon-11" or "Freon-21". Dr. Snow points out that the Merchandising Manager of Electric Refrigeration, a Mr. Price, is greatly concerned over the almost universal acceptance of the "Freon" refrigerants and feels that Sears-Roebuck cannot go ahead successfully with their program unless the refrigerant is included in their machines. I suggested that they change their design to the Scotch Yoke type of compressor similar to Westinghouse, Kelvinator, and Crosley, but they feel that they have advertised the rotary type compressor and cannot change from this principle at the present time.

Type of Contract they would be willing to sign

Dr. Snow informed me that if they could secure "Freon-114" that they would be willing to sign a contract for a ten-year period guaranteeing that they would use the chemical of our manufacture during that period. He suggests that if we should desire to charge them two or three cents a pound more than charged Frigidaire in order to compensate us for past development work, that they would not be unwilling to meet our ideas in this direction.

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Other Refrigerants.

I asked him if he would be willing to pay \$1.25 per pound for a refrigerant having similar qualities as "Freon-114" and he thought that this price was entirely out of line and that they could not afford it.

The Future

It is his opinion that electric refrigerators must sell for less money than they have in the past in order to reach that segment of the population which cannot afford refrigerators at present prices and he thinks there will be a rapid disappearance from the manufacturing field of those who cannot manufacture cheaply and merchandise successfully. He intimates that in the end there may be only two concerns manufacturing and selling refrigerators, namely Frigidaire and Sears-Roebuck. There is, in my opinion, a great deal in what he says and I look for the retirement from the field of the weaker sisters in the business who must have present-day prices in order to exist.

Sears-Roebuck Policy.

According to Dr. Snow, Sears-Roebuck offers a manufacturer the opportunity but once to do business with them. As a concrete example of this, he says that he called in our window shade people some years ago and asked them to manufacture a better shade than Sears-Roebuck were then merchandising. We wanted to sell the Tontine Shade but the price was so far out of line that Sears-Roebuck figured that they could not merchandise a shade for that price. An independent concern made them the shade and later DuPont sought the business for the same quality of shade, but it was then too late. They were tied up with the independent concern and were loyal to them. There have been several instances of this kind in which we lost out because of our policy or lack of enterprise.

Summary

Dr. Snow says that Sears-Roebuck want to do business with us for "Freon-114" and no other refrigerant for household refrigerators. He cannot understand any policy of ours which grants monopoly of this refrigerant to Frigidaire. It goes without saying, of course, that I told him that the refrigerant was not available to any other manufacturer but Frigidaire. He knew this before he came to the meeting. His last words to us as he left us in the McAlpine Hotel were: "We want to do business with you. Don't force us to go elsewhere".

My Opinion

It is my opinion that if we do not sell "Freon-114" to Sears-Roebuck that they are the kind of an organization which will let nothing deter them in their program. They will doubtlessly take it up with another chemical manufacturer and have the product produced for them, taking whatever consequences may arise from patent suits. It is certainly logical at this time to put us in a position to sell to Sears-Roebuck, Norge, and Launders, Frary and Clark. If we are permitted to sell to these parties we can assure you of a volume of 800,000 pounds per year in any year which is reasonably normal for the next five

years. No one can say how many refrigerators will be sold after another five-year period as the market is becoming rapidly saturated.

Respectfully submitted,

W.W.T. Hodges

WWR:L

5017

Sept. 11, 1938

Mr. E. G. Robinson, President
Kinetic Chemicals, Inc.,
Wilmington, Del.

Dear Mr. Robinson:

I wish to thank you kindly for sending me a copy of the letter of Sept. 13th from Mr. E. Wood, President of Sears-Roebuck.

Following our telephone conversation I talked on the telephone with Mr. Biechler. It is my understanding that he reviewed this matter with Mr. John Thomas Smith and that Mr. Smith feels that there is no cause for alarm over this letter.

It is my further understanding that steps will be taken to clear up this matter once and for all thru making some change in the present agreement between Kinetic Chemicals and Frigidaire.

My understanding of the facts are that F-114 was developed by Frigidaire and turned over to Kinetic for manufacture with the understanding that this was to be exclusively for the use of Frigidaire. Had Frigidaire known of the subsequent developments, I am sure they would have limited its use to themselves.

Accordingly, I feel that they are perfectly within their rights to ask for a new agreement protecting them in this respect.

I understand that your attorney will consult with Mr. John Thomas Smith and Mr. Fearn with a view to making such arrangement. I shall be most happy to attend a Directors Meeting if you feel it is necessary to discuss this matter further.

Very truly yours,

EGB

MAD

CC- Mr. E. G. Biechler

A. M. Biechler

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Government's Exhibit No. 856

5018

September 15, 1958

Mr. E. G. Biechler, Pres. and Gen. Mgr.
Frigidaire Corporation
Argonaut Building
57th & Broadway
New York City, N. Y.

Dear Mr. Biechler:

The attached is in accordance with our
telephone conversation.

Very truly yours,

E. G. ROBINSON, PRESIDENT
KINETIC CHEMICALS, INC.

(2738)

5019

SEARS, ROEBUCK AND CO.
360 West 31st Street
New York

September 13, 1938.

PERSONAL

Mr. W. F. Harrington,
Vice President,
E. I. Du Pont de Nemours, Inc.,
Wilmington, Del.:

My dear Harrington:

You may possibly know that Sears is very heavily interested in the manufacture of electric refrigerators. We distribute over 200,000 a year of the refrigerator manufactured by the Sunbeam Company of Evansville, Ind.

We wish to use the Freon #114 gas which is today manufactured by the Kinetic Chemicals Inc., a subsidiary of the DuPont Company.

Very much to our surprise, we find that the Frigidaire Company has an exclusive arrangement for the use of this gas from the Kinetic Chemicals, Inc. We know this has always been contrary to the policy of the DuPont Company - as a matter of fact, it is contrary to governmental policy. I am appealing to you to see whether the Sunbeam Company, which is really controlled by Sears, Roebuck and Co., cannot purchase this gas on any fair terms that you may determine to designate. Sears, directly, and indirectly through its subsidiaries, has been a very large customer of the DuPont Company for many years and has maintained the most friendly relations with the DuPont Company.

As you know, personally I have a great admiration for the Company and a real friendship with its officers, because I always remember the first job I took outside of government service was with the DuPont Company and I can never forget the kind and considerate treatment I received. We certainly do not want to spoil these friendly relations by an appeal to the Federal Trade Commission, so I am writing this personal note to you in the hopes that you can use your influence to effect some fair arrangement.

Very truly yours,
SEARS, ROEBUCK AND CO.

/s/ R. E. Wood
President.

P.S. I am just in New York for today and am writing from our New York Office; Please address your reply to our Chicago Office.

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KINETIC CHEMICALS, INC.

CC - Mr. W. F. Harrington
Mr. H. C. Haskell

September 23, 1938

Mr. E. R. Bresch,
General Motors Corporation,
Detroit, Michigan.

Dear Mr. Bresch:

I just received this morning your letter of September 11st with regard to "F-114". Apparently this letter was delayed a day or two in reaching me.

I think I should point out that the statement you make in the fourth paragraph of your letter does not exactly represent the facts in the matter. You say that "F-114" was turned over to Kinetic with the understanding that it was to be exclusively for the use of Frigidaire. As a matter of fact our fundamental agreement, which set up Kinetic, provided that both companies would turn over their developments in this particular field to Kinetic to exploit freely and without limitation as to customers to whom the product was to be sold. This policy was set up by Mr. Pratt at the time of the formation of Kinetic and was instituted, as I recall it, both because that was in accordance with the general policy of General Motors in connection with the sale of automobile accessories and also because we all believed at that time that it would be unwise to discriminate between competitors and in this way handicap the acceptance of the refrigerant.

We have from time to time agreed in our Board meetings that we would restrict the sale of "F-114" to Frigidaire but this was also agreed upon as a temporary expedient with the reservation that it would be discussed again at a later date. This was also based upon Frigidaire's representation, which we at the time accepted, that the financial interests of both stockholders would be better served by such restriction in that du Pont, as well as General Motors, would make more money through their share in Frigidaire's increased profits than they would make through their share in the profits Kinetic would obtain from a broader sale of the refrigerant.

Of course, it would be possible by mutual agreement to revise the obligations which are provided for under our present agreement, but as far as I know there has been no understanding that this would be an advisable thing to do.

Very truly yours,

E. G. ROBINSON, PRESIDENT
KINETIC CHEMICALS, INC.

EGR:EM

Mr. A. J. Snow,
Snow, Beckert & Company,
General Merchandise Office,
Chicago, Illinois

Dear Mr. Snow:

After telegraphing you today that I had not heard as yet the decision of our Management respecting the sale of "Freon-114" to the Standard Electric Company, the decision was communicated to me.

"Freon-114" was developed in the laboratory of the Frigidaire Corporation and, unfortunately, we are not in a position to offer it for general sale at this time.

We shall, of course, be delighted to sell you "Freon-11", "Freon-12", "Freon-13", or any other refrigerants that we may manufacture in the future. There are several refrigerants being developed at the present time which may be fully as good as "Freon-114", but as yet we have not devised a process or processes which will allow us to produce these refrigerants at an economical figure. While at present it seems to your engineers that "Freon-114" is the only one of our products which is of interest to you, nevertheless it may be that in their research on machine design, they will find that "Freon-13" is an efficient fluid.

As I pointed out to you in New York, there is no longer a tendency to build the rotary type compressors. The later design is of the snout type, and I feel sure that such a design is economical in the cost of production. I know that it is very efficient. It is the vogue today in the Industry. The last company to manufacture a snout type of compressor is Stewart-Warren. Buntinghouse, Kalvinator and Leonard have been employing this design for at least two years.

It must be remembered that Kalvinator had given very active consideration to the rotary type design but gave up the idea in favor of the snout type.

I hope to have the pleasure of seeing you in the near future and will accept your kind invitation to drop in to see you the next time I am in Chicago.

Yours very truly,

KRYPTIC CHEMICALS, INC.

(234) W.W. Hodges
Sales Director

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E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE

October 10, 1938.

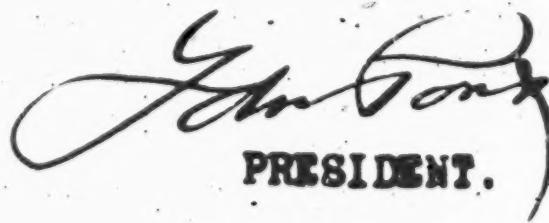
EXECUTIVE OFFICES

Mr. Alfred P. Sloan, Chairman,
General Motors Corporation,
New York City, New York.

Dear Alfred:

This is just a note to remind you of the Kinetic Chemicals matter, of which I spoke to you on the 'phone last Thursday. Messrs. Biechler, Pratt and J. T. Smith are, I think, fully informed on the matter, and I would appreciate it very much if you would inform yourself and advise me your views.

Yours sincerely,


John D. Long
PRESIDENT.

LduP/MD

5024

GENERAL MOTORS CORPORATION

BROADWAY AT 57TH STREET

NEW YORK, N.Y.

October 14, 1938.

Mr. Lammot duPont, President,
E. I. duPont deNemours & Company,
Wilmington, Delaware.

RE: KINETIC CHEMICALS COMPANY -
GENERAL POLICY WITH REGARD TO F-114

My dear Lammot:-

Referring to your inquiry over the telephone, supplemented by your letter of October 10th, and in turn confirming my telephone message of even date, would state that I am quite convinced that, from the standpoints of equity, law or legal limitations or sound business policy, we are not justified in selling F-114 to Sears-Roebuck. It is distinctly a type of thing that we should reserve for our own exclusive use.

I hope that the directors of Kinetic Chemicals Company will take action, accordingly.

Very truly yours,

Appleton

APSJr./K

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FRIGIDAIRE DIVISION

GENERAL MOTORS CORPORATION

CORPORATE
FRIGIDAIRE
ALL OTHER TRADE

DAYTON, OHIO, U.S.A.

October 17, 1938

Mr. Alfred P. Sloan, Jr., Chairman of the Board,
General Motors Corporation,
1775 Broadway,
New York, N. Y.

My dear Mr. Sloan:

I appreciate very much your letter of October 14th, and the copy of your letter of the same date written to Mr. Lamont duPont concerning refrigerant F 114 which has been manufactured by Kinetic Chemicals for us.

Certainly, the exclusive use of this refrigerant, which we developed in connection with our rotary compressor, is of major importance to us, and it is very gratifying that you have drawn the conclusions which you stated in your letter to Mr. duPont.

We thank you for your interest in this matter.

Yours very truly,

Eppie Schell
General Manager

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KINETIC CHEMICALS, INC.

WILMINGTON DELAWARE

5026

October 19, 1950

Mr. E. R. Bresch,
General Motors Corporation,
Detroit, Michigan.

Mr. E. G. Blechler,
Frigidaire Division,
General Motors Corporation,
Dayton, Ohio.

Gentlemen:

For your information, we are attaching hereto copy of letter of October 18th written by Mr. W. F. Harrington to General Wood and copy of letter of October 14th from Mr. W. W. Rhodes, Sales Director, to Dr. A. J. Snow, of Sears, Roebuck and Company, in reference to the sale of "Froon-114" to the Sunbeam Electric Company.

Very truly yours,

E.G. Robinson
E. G. ROBINSON, PRESIDENT
KINETIC CHEMICALS, INC.

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(C O P Y)

October 17, 1938.

General R. E. Wood, President
Sears, Roebuck and Company
Chicago, Illinois

My dear General Wood:-

I told you in my letter of September 15th that the subject of the sale of "T-114" to Sunbeam would be investigated and an answer made to you as soon as possible. I am informed that Kinetic Chemicals, Inc., on October 15th wrote a letter to Dr. Snow explaining the situation.

As you probably know, the Du Pont Company is not the sole owner of Kinetic Chemicals; General Motors is also a stockholder. "T-114" was developed in the laboratories of the Frigidaire Corporation and, unfortunately, Kinetic Chemicals is not in a position at this time to sell "T-114" outside of Frigidaire's requirements. I regret this situation and hope that either the Du Pont Company or Kinetic Chemicals may be able to find among their products a chemical suited to your purposes or, failing that, that we may be able to develop one that will meet your requirements.

Yours very truly,

W. F. Harrington,
Vice President.

W.H.L.B.

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Mr. Ernest R. Bréech,
Vice President.

John Thomas Smith,
General Counsel.

Re: Frigidaire's use
of F-114.

Detroit, Michigan.

New York, N. Y.

May 8, 1939.

Referring to the question as to the best way to protect Frigidaire in its exclusive use of F-114, I make no doubt that the surest procedure would be that suggested by you. If Kinetic Chemical Company were to sub-license Frigidaire exclusively, that would be an end of the matter. The decision as to its future use, viz., whether to give it to its competitor, and if so, upon what terms, would rest solely with Frigidaire. This sort of protection would not be accorded by any resolution that the Board of Directors of the Kinetic Company might adopt. Such a resolution is an expression of present policy, and of course is subject to future change. It would, for instance, be quite possible for the Kinetic Board (upon a proper showing satisfactory to it) to reverse at any time its present policy of allowing only Frigidaire to use F-114.

It is of course, quite possible to foresee a situation where a competitor of Frigidaire might endeavor to bring extra legal pressure upon the Kinetic Company. The resolution would afford no great comfort against this approach. On the other hand, Frigidaire, if the exclusive licensee, might much more effectively justify its continuance as such, against any possible argument. It would simply be preserving its own development; and this is usual practice that requires no justification.

NOTE: The handwritten words, "Kinetic Chem Co" appear in the upper right hand corner.

5000

2

-2-

Therefore, it seems to me that if Kinetic is willing to let Frigidaire be the exclusive user, it would really lose nothing, and gain much in relief against possible future pressure if it granted to Frigidaire an exclusive license converting a moral commitment into a legal relation.

I am returning the correspondence;

General Counsel,

JTS:Hr
Enc.

2748

5030

Letterhead of
KINETIC CHEMICALS, INC.
WILMINGTON, DELAWARE

June 13, 1939

Mr. E. R. Breech, Vice President
General Motors Corporation,
Detroit, Michigan.

Dear Mr. Breech:

Following your letter of May 11th, we have been giving consideration to the plan which you proposed for licensing Frigidaire to use "F-114".

We have decided that it would be advisable to convey to Frigidaire an exclusive license for this use and are preparing a form of license agreement to make this effective. If this form proves to be satisfactory to you we can then bring it up for action at the next meeting of the Board of Directors.

We have, of course, an investment in a plant to make "F-114" and for the present at least can presumably expect to keep it reasonably occupied with Frigidaire's requirements of this product. However, I presume that we would anticipate that the time might come prior to the expiration of the patent when Frigidaire might abandon, or partially abandon the use of the refrigerant and under those circumstances we would, of course, like to be able to employ our plant in manufacturing the product for other possible customers. I presume that you would have no objection if the

2
license agreement should provide that under such conditions
the license should again become non-exclusive.

Very truly yours,

E. G. ROBINSON, PRESIDENT
KINETIC CHEMICALS, INC.

EGR:EM

CC—Mr. E. G. Biechler
Mr. W. F. Harrington

NOTE: Handwritten DD 709 is in the upper right hand corner. A Capitalized B, underlined, is in the center. A handwritten check appears in the lower left hand corner with the handwritten word "Noted" and initials.

2750

GENERAL MOTORS CORPORATION
DETROIT, MICHIGAN

5032

June 19th, 1939

Mr. E. G. Robinson
Kinetic Chemicals Inc.,
Wilmington, Del.

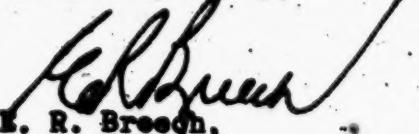
Dear Mr. Robinson:

I wish to thank you very kindly for your letter of June 19th. I was particularly interested to learn that you have decided it is advisable to convey to Frigidaire an exclusive license for "Y-114".

With respect to including in the license agreement to the effect that, if Frigidaire abandon the use of "Y-114", the license should again become non-exclusive, you most certainly raise an equitable point. On the other hand, considering the mutuality of ownership of Kinetic Chemicals, Inc., it might be just as well to prepare the exclusive license agreement without any such qualification, with the understanding that when and if such condition does arise, it will be to our mutual interests to modify the agreement.

On the other hand, if you feel that this provision should be in the license agreement, may I suggest that you forward to Mr. Biechler and the writer copies of the proposed agreement at which time we can go into the matter further.

Yours very truly,


E. R. Biechler,
Vice President.

ERB
MAC

2751

(Letterhead of)
KINETIC CHEMICALS, INC.
Wilmington, Delaware

CC — Mr. E. G. Biechler

June 29, 1939

Mr. E. R. Breech, Vice President,
General Motors Corporation,
Detroit, Michigan.

Dear Mr. Breech:

Replying to yours of June 19th, I am sending you herewith a form of agreement which we would suggest for approval by Kinetic Chemicals, Inc., to accomplish the purpose of transferring to General Motors an exclusive license to use "F-114" under the conditions set forth in the draft.

This form of agreement is in accordance with our letter of June 13th and covers the provision which we suggested for the protection of Kinetic's investment by providing that if Frigidaire made any major change in their present policy of using "F-114" exclusively, or almost exclusively, in their household refrigerator line; then Kinetic would be free to sell "F-114" to other prospective customers. We have suggested the figure of 50% of the number of household refrigerator units as a dividing line with the thought that if and when such a large percentage of units should be charged with some other refrigerant, it would represent a substantial decrease in Frigidaire's interest in "F-114", and also a substantial decrease in Kinetic's outlet for this product.

5034

2

I will be glad to receive your comments on this draft
which, it seems to me, substantially covers the arrangements
which we have discussed previously.

Very truly yours,

E. G. ROBINSON, PRESIDENT
KINETIC CHEMICALS, INC.

EGR:M

NOTE: Stamped in upper right-hand corner "Executive
Office July 1 1939" and "Received ? ? 1939 Patent Dept.
Frigidaire Div."

2753

GENERAL MOTORS CORPORA

INTER-ORGANIZATION LETTERS ONLY

50:35

DATE September 21, 1939

SUBJECT

TO

Mr. John Thomas Smith
General Motors Corporation

ADDRESS

New York, New York

I know that you will be interested in learning that a new agreement has recently been executed with Kinetic Chemicals, Inc., whereby "Kinetic hereby grants to General Motors the sole and exclusive right and license, under said Patent 2,007,196 and under any other patent licensed to Kinetic by virtue of said agreement of May 1, 1932, and covering tetra-fluoro-dichloro-ethane or its use as a refrigerant, to use said product in, and to sell said product in or for use in, refrigerating apparatus or equipment, it being expressly understood and agreed, however, that no right or license is granted to General Motors by this agreement, or reserved by General Motors by said agreement of May 1, 1932 to make tetra-fluoro-dichloro-ethane."

I am certain that this will be a much more satisfactory agreement than previously existed.

I am indebted to you for your assistance in the matter.

K. R. Brooch
K. R. Brooch,
Vice President

5036



KINETIC CHEMICALS, INC.

WILMINGTON, DELAWARE

CABLE ADDRESS KINETICHEM

April 3, 1942

Mr. E. G. Biechler
 President and General Manager
 Frigidaire Division
 General Motors Corporation
 Dayton, Ohio

Dear Mr. Biechler:

I have your letter of March 30th, respecting the letter you received from Mr. F. E. Anderson, of the F. E. Anderson Oil Company, and would advise that Mr. Anderson did not obtain from us any information whatsoever respecting the patent relationship existing between us in connection with "Freon-114". He has evidently obtained this information from someone else and attributes it to us.

I tell you this because there might exist a feeling on your part that in all such cases we were passing the buck to Frigidaire in connection with the situation. This is not true, as we do our best to shield Frigidaire from just such inquiries, and only when there is no escape do we candidly tell the party that we have no rights under the "Freon-114" patent except the rights of manufacture.

In this particular case we did not know the F. E. Anderson Oil Company nor for what purpose they required the sample of "Freon-114". A good many people are taking advantage of the war to secure materials which they properly have no interest in. You will, therefore, note that the letter of March 11th was answered by our stereotyped method in my letter of March 16th. On receipt of Mr. Anderson's letter of March 17th, I asked him for the information which he has disclosed to you in his letter of March 28th. I am attaching copy of a letter that I have written to him today. We will keep you informed of the developments.

Yours very truly,

KINETIC CHEMICALS, INC.

W.W.T. Sholes
 Sales Director

WWR:DR

2755

Letterhead of
KINETIC CHEMICALS, INC.
WILMINGTON, DELAWARE

March 8, 1943

Mr. E. F. Johnson, Vice President
General Motors Corporation,
Detroit, Michigan
Mr. E. G. Biechler, General Manager
Frigidaire Division
General Motors Corporation,
Dayton, Ohio

Gentlemen:

"F-114" FOR LARGE SCALE REFRIGERATION

We have just received a letter from the Worthington Pump and Machinery Corporation, in which they raise a question as to the possibility of their obtaining "F-114" to use as a refrigerant in large scale Centrifugal Compressors. They point out that in their plans for post-war they anticipate the possibility of manufacturing and selling machines of this type and are wondering whether it will be feasible for them to proceed with plans along this line which are dependent upon the expectation that the necessary refrigerant would be available.

In their plans they are considering this refrigerant for use only in machines of 50 or more tons capacity of the centrifugal type which is, we believe, entirely outside of the field in which General Motors is interested and it seems to

us that the importance of this prospect from Kinetic's standpoint justifies our inquiring of you what is your attitude today in this connection.

You will recall that we have in the past given both Worthington and Carrier on several specific occasions permission to use "F-114" in machines of this type for particular installations. For a certain range of temperatures this refrigerant is particularly suitable for use in centrifugal machines.

It seems to us, therefore, that from the standpoint of both Kinetic and the industry it would be desirable to make "F-114" available for the particular type of work described above, namely, for use in centrifugal type compressors of 50 or more tons capacity. If you agree, we would like to make this

—2—

offer to Worthington and also to the Carrier Corporation and others who are interested in this type of business. Obviously it is only under such conditions that they can design and offer such machines.

Very truly yours,

E. G. Robinson

E. G. ROBINSON,
PRESIDENT

EGR:EM.

NOTE: Italics indicate handwriting.

FRIGIDAIRE

DAYTON OHIO

Mr. R. G. Robinson, President,
Kinetic Chemicals Inc.
Wilmington, Delaware.

Dear Mr. Robinson:

We have your letter of March 8th regarding selling Worthington Pump and Machinery Corporation and Carrier Corporation F-114 for use in large compressors. I have discussed this with Mr. Johnson as well as our own people here, and we can see no objection to this plan. In fact, you may think we are getting very magnanimous when I say that we believe we would be willing to open up F-114 to be sold to anyone, regardless of size of compressor or company. At the present time, naturally, we would like to see you sell as much F-114 as possible because it benefits the whole situation, and if you can get business for large compressors it would be very helpful.

No one knows, of course, when the war will end, but when it does, we are of the opinion that sooner or later we could switch from F-114 for our household compressors to F-12 and since post war no doubt will find business extremely competitive, this would help Frigidaire in its costs, since F-12 is cheaper.

Our viewpoint, discussed above, is confidential, as you well know, and we would not want our competitors to know

exactly what we are about. I feel that Mr. Rhodes and your organization can handle it in a satisfactory way as the time approaches when you would be trying to make sales of this product by simply not explaining anything regarding the situation. You could simply say that as far as Kinetic was concerned, F-114 was in the same category as F-12.

We would be pleased to know your attitude with respect to the whole F-114 situation but in the meantime, it is entirely agreeable from a General Motors standpoint to sell F-114 to Carrier and Worthington for the purpose mentioned in your letter of March 8th.

Very truly yours,

E. G. Biechler

EGB:RD

50.41

March 24, 1948.

Mr. E. G. Robinson, President,
Elasto Chemicals Inc.,
Wilmington, Delaware.

Dear Mr. Robinson:

In reply to your letter of March 8th suggesting the selling of Polle to Carrier Corporation and the Washington Pump and Machinery Company, I have discussed this with Mr. R. F. Johnson and we both agree that your idea of supplying them with Polle is quite in order.

From a General Motors and Brightline standpoint, you can consider this letter as our approval for you to proceed to sell Polle to these two companies, as you have indicated in your letter.

Hoping this is satisfactory, I am
Very truly yours,

R. G. Mackler
General Manager

I think Karlin will probably ask for (or prefer
as send to us) a formal amendment of the license
agreement between Karlin & GM which grants
GM the an exclusive license under F-114.

JKZ

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KINETIC CHEMICALS, INC.

WILMINGTON, DELAWARE

CC- Mr. E. F. Johnson, Vice President
 General Motors Corporation
 Detroit, Michigan.

KINETIC CHEMICALS, INC.

WILMINGTON, DELAWARE

RECEIVED

April 8, 1943

APR 10 '43

EXECUTIVE OFFICE

Mr. E. G. Biechler, General Manager
 Frigidaire Division,
 General Motors Corporation,
 Dayton, Ohio.

Dear Mr. Biechler:

I received your letter of March 24th
 and am very glad to note that General Motors and Frigidaire
 approve our selling "F-114" to Carrier and Worthington for
 use in large scale centrifugal type compressors. I think
 this is a wise decision.

Of course, as I said to you in our
 letter of March 8th, these are not the only two companies
 interested in this type of business. York Ice Machinery
 Company and also the Trans Company make this type of
 machinery and York have already talked to us about the
 use of "F-114" for such purposes. I presume that your
 attitude with regard to any responsible company would be
 the same as that you have already expressed in connection
 with Carrier and Worthington.

Very truly yours,

E.G. Robinson
 E. G. ROBINSON
 PRESIDENT

EGR:EM

2761

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FRIGIDAIRE
DAYTON, OHIO

February 21, 1944

28

Mr. C. D. Fouch, President
Kinetic Chemicals, Inc.
Wilmington, Delaware

Dear Mr. Fouch:

In accordance with Article 2 of the Second Amendment dated September 18, 1939, to License Agreement between General Motors Corporation and Kinetic Chemicals, Inc., we certify that during the calendar year 1943, our sale of Household Refrigerators, bearing Frigidaire nameplate, and not containing "Free-on-114", amounted to .54% of the total refrigerators sold.

Very truly yours,

FRIGIDAIRE DIVISION

D. W. Barber

Divisional Comptroller

DEB:H
CC: Messrs. Godfrey
Fehr
Puls

90

Sale of Ref. with 7-114 - 85697 - 99.46
 7-12 - 468 - .54
 $\frac{86,165}{= 100\%}$

NOTE: Printed in the right hand corner appears the date received. A handwritten check follows a name in the lower left hand corner. In the center appears two columns of addition of handwritten numbers with handwritten explanations preceding the numbers.

2762

(Letterhead of)

KINETIC CHEMICALS, INC.
Wilmington, Delaware

CC: Mr. E. R. Godfrey

March 10, 1944

Mr. E. F. Johnson
Vice-President
General Motors Corporation
Detroit, Michigan

Dear Mr. Johnson:

We have your letter of February 24th, in which you propose an arrangement for licensing us to sell "Freon-114" for use in household refrigerators upon the payment by Kinetic to the Frigidaire Division of a royalty of 5¢ per pound, in addition to the 5% royalty which is already paid in accordance with the terms of the agreement of May 1, 1932.

Our interest in securing the right to sell "Freon-114" for use in household refrigerators is in order to satisfy the importunities of our customers, many of whom are already customers for "Freon-12", who wish to investigate the desirability of developing a machine using "Freon-114" for their postwar business. We have never expected that this would lead to any important sales of this particular refrigerant. It was rather our belief that the ability to accede to these requests was important to Kinetic from the standpoint of retaining the goodwill of our "Freon-12" customers, which has been built up laboriously over a period of years.

The suggestion that we should charge a royalty which would amount to about 15% on this refrigerant, whereas we collect only 5% on the other products in our line, would, it seems to us, be inimical to the main purpose outlined above. This is entirely aside from the fact that the Robinson-Patman law prevents us from charging a different price to these customers than we charge to Frigidaire, or that price ceiling considerations effectively prevent us from increasing the price already established for "Freon-114".

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Under these circumstances it seems to us that the only sound policy for Kinetic would be to relinquish the idea of selling this refrigerant for household refrigerator purposes and to advise our customers to this effect, since we believe that offering it under the conditions you suggest would completely fail to accomplish our purpose.

Yours very truly,

C. D. Porch
C. D. Porch
President

NOTE: In upper right-hand corner of first page of letter is stamp "Received Mar 13 1944" over which are written some illegible initials. Italics indicate handwriting.

February 24, 1944

Kinetic Chemicals, Inc.
Wilmington, Delaware

Gentlemen:

Referring to our agreement with you of September 18, 1939, under which you granted to us an exclusive license to use Freon-114 in, and to sell Freon-114 in, refrigerating apparatus, would advise that we are agreeable that you supply this refrigerant to others for use in refrigerating apparatus under our license provided that you collect from such customers and pay over to Frigidaire Division a fee of five cents per pound of Freon-114, purchased by such customers, as partial compensation for their engineering costs in the determination of the physical, chemical and thermodynamic properties of Freon-114, and the lubricating, electrical, metallic, processing and other requirements for the commercial utilization of Freon-114 in refrigerating apparatus. With the sale of Freon-114 to others, we would, of course, want to have Article II of the agreement of September 18, 1939, cancelled, since it would, no longer be necessary.

It is understood that this arrangement is not to modify in any manner the terms of the agreement of May 1, 1932, between Frigidaire Corporation and your company.

If the above offer is acceptable to you, kindly sign this letter in the space provided below and return one copy to us, retaining the original for your files.

Very truly yours,

GENERAL MOTORS CORPORATION

By (Signature Illegible)

Vice President

Accepted:

KINETIC CHEMICALS, INC.

By

President

NOTE: COPY is printed across the page. An illegible handwritten signature appears in the right hand corner above the printed words "Vice President".

KINETIC CHEMICALS

WILMINGTON, DELAWARE

5048

March 4, 1944

MR. C. D. PORCH, PRESIDENT
 KINETIC CHEMICALS, INC.
 6430 MEMOIRS BUILDING

SUBJECT: RIGHT TO SELL "FREON-114"

I recommend that some arrangement be made with the Frigidaire Corporation so that we may be permitted to sell "Freon-114" without any restrictions even though it means a monetary sacrifice to the company.

My reasons for this recommendations are as follows:

1. It will remove all restrictions from the sale of any of our refrigerants and no longer could anyone allege that we had a favored customer. We are playing such an important part in the world of refrigeration today that this allegation, which has been made openly by General Wood of Sears, Roebuck and in many other quarters in the industry, could no longer be supported by the facts.
2. It enables us to offer a complete line of refrigerants for every purpose and this is of enormous advantage to the industry, as there is no good refrigerant in our line for rotary machines of small size.
3. With the complete line of refrigerants it is a deterrent to others from entering into the field of manufacturing and selling fluorinated hydrocarbons.
4. Last, but not least, it enormously adds to our prestige as a fair, honest, and honorable company.

There has been, as a result of the shortage of "Freon-12", a realization on the part of manufacturers of refrigerating machinery that we are able to dictate terms to them and their destiny is in our hands. This attention having been sharply focused in the past six months, it is necessary for us more so than ever to have the reputation of Caesar's wife.

/s/ W. W. Rhodes
 SALES DIRECTOR

WWR:VSW

2767

Government's Exhibit No. 878

5019

TO Mr. E. G. Robinson
FROM C. D. Porch

DATE March 6, 1944

The attached "History of the Development and Exploitation of 'Freon-114'" is a rough draft which I am submitting for your criticism and suggestions.

It is necessary for me to attend a conference in Washington tomorrow, but I would like to discuss the attached paper with you at your convenience on Wednesday.

5050

THE HISTORY OF THE DEVELOPMENT
AND EXPLOITATION OF "FREON-114"

In order to fulfill certain conditions established under the terms of the du Pont-General Motors Agreement, dated August 27, 1930, Frigidaire Corporation, a corporation of the State of Delaware, granted to Kinetic Chemicals by an agreement dated May 1, 1932, an exclusive license under its patent applications and patents to make, use, and sell certain products (including "Freon-114"), said grant being subject to the right reserved by the Frigidaire Corporation for itself and General Motors to use such products as refrigerants in their own business. This agreement included rights to Patent Application 512,472, which subsequently issued as United States Patent 2,007,198, upon which the following discussion is based.

One of the terms of the Kinetic-Frigidaire Agreement was to the effect that Kinetic should pay to Frigidaire a royalty of 5% of the selling price of all "said products" manufactured and sold by Kinetic under the licensed patents and applications.

Kinetic began the production of "Freon-12" January 1, 1931. At the fourth meeting of its Board, held November 13, 1931, the Kinetic management was advised of Frigidaire's possible interest in "Freon-114". An appropriation for the construction of a plant for the manufacture of "Freon-114" was approved at a special meeting of the Board, held on September 29, 1932. It was at this meeting that the sales policy governing the future distribution of this new refrigerant was first discussed. This discussion resulted in the passage of the following resolution:

"RESOLVED, that it is the sense of this Board that any commercial distribution or any effort toward commercial distribution of "Freon-114" should be confined to the Frigidaire Corporation for the time being."

About this time Kinetic Chemicals entered into an agreement with the Frigidaire Corporation to supply 300,000 pounds of "Freon-114" during the two-year period January 1, 1933 to December 31, 1934.

Kinetic experienced certain difficulties in getting its plant into production in the spring of 1933, so Frigidaire found it necessary to construct and operate a temporary plant during this period. Kinetic reimbursed Frigidaire to the extent of \$37,024 for the extra expense it incurred as a result of Kinetic's failure to meet the terms of its sales contract. This settlement eliminated all questions between Kinetic and Frigidaire regarding the original sales agreement and no question of this nature has arisen since.

Shortly after "Freon-114" was made available to Frigidaire several of Kinetic's customers who were purchasers of the refrigerants "Freon-11" and "Freon-12" requested samples of "Freon-114" for test purposes. In view of the action taken by the Kinetic Board,

these customers were advised that Kinetic's production capacity was limited to its ability to supply Frigidaire's requirements, so none was available for general distribution.

This question of releasing "Freon-114" was reviewed by the Board from time to time at its subsequent meetings from November, 1932, to November, 1937. At a meeting held on April 27, 1936, it was informally agreed to permit Kinetic to offer "Freon-114" for use in large commercial and air conditioning refrigeration machines.

After a careful consideration of the effect of releasing "Freon-114" under such restrictions, the conclusion was reached that such a policy would result in an increase in the pressure from the household refrigeration machinery manufacturers for this product, so no releases were made.

Subsequent to this meeting Mr. E. R. Breech, recently elected to the Kinetic Board to replace Mr. J. L. Pratt, advised Mr. Alfred P. Sloan, Jr. of Kinetic's interest in obtaining the release of "Freon-114" for unrestricted sales and of the possible damaging effect such action might have upon Frigidaire's position.

This conference between Mr. Breech and Mr. Sloan, held on September 22, 1936, resulted in a strong letter of protest from Mr. Sloan to Mr. Lamont du Pont, under the same date, to which Mr. du Pont replied under date of September 30th.

In the meantime, the Kinetic Board met on September 24th, at which meeting the following minute was recorded in reference to the sale of "Freon-114" to the general trade:

"This subject was brought before the Board for review, and after discussion it was agreed that the matter should be left in status quo, with the understanding that it will be given further consideration about one year hence."

The informal release of "Freon-114" for commercial use was rescinded by further action of the Board taken at its nineteenth meeting, held November 19, 1937, which is covered by the following minute:

"After full discussion of this matter it was moved and unanimously carried that the management be advised it is the sense of the Board that no action should be taken at this time with reference to the sale of "Freon-114" for use in household machines or for use in large machines."

Throughout the following year there were many indications of increasing dissatisfaction with Kinetic's policy covering the sale of "Freon-114" among its customers, which culminated in a definite attempt on the part of Sears Roebuck and Company to force a release of "Freon-114" to the Sunbeam Electric Company.

5052

A conference between Dr. A. J. Snow, Special Advisor to the Merchandising Managers of Sears Roebuck and Company, with Kinetic's Sales Manager, W. W. Rhodes, held on September 9, 1938, was followed by a belligerent letter of protest from General R. E. Wood, President of Sears Roebuck and Company, to Mr. W. F. Harrington.

As a result of this contact the Kinetic management recommended that the Board again review the "Freon-114" sales policy, which was done at the meeting of the Board held in the General Motors Building, New York City, October 3, 1938.

In reviewing the conditions which had dictated the establishment of the "Freon-114" sales policy, Mr. E. G. Robinson pointed out that this policy had been discussed from time to time and that the Board had agreed to restrict the sale of "Freon-114" to Frigidaire as a temporary expedient, always with the reservation that this question would be discussed again at a later date. The policy was based upon Frigidaire's representation, which was accepted by the members of the Board, that the financial interests of both stockholders would be better served by such a restriction, in that du Pont, as well as General Motors, would make more money through their share in Frigidaire's increased profits resulting from its preferred position than they would make through their share in the profits accruing to Kinetic through a broader sale of the refrigerant in question.

The following minute, recorded at the meeting of October 3, 1938, indicates the decision reached on this subject at that time:

"Sale of 'Freon-114' to the General Trade:

"The above subject was discussed at length with

Mr. Charles E. Wilson, Vice-President
 Mr. John Thomas Smith, V.P. & General Counsel
 Mr. John L. Pratt, Vice-President
 Mr. Newell and Mr. Fehr
 all of General Motors Corporation.

"As a result of this discussion, it was agreed that the sale of 'Freon-114' should continue to be limited to the Frigidaire Corporation."

This action of the Board offered Kinetic no relief from the ever increasing demands from the trade for "Freon-114" which had now reached the point where Kinetic's friendly business relations with some of its customers were seriously threatened.

In order to relieve this situation, General Motors representatives on the Kinetic Board suggested that Kinetic grant to General Motors an exclusive license covering the use and sale of "Freon-114" for refrigerating purposes, contending that with such an arrangement in effect Kinetic could no longer be charged by its other customers with the practice of arbitrary discrimination.

This suggestion was adopted by the Board and an exclusive license was subsequently granted to General Motors by an agreement executed September 18, 1939.

With the advent of the war and the demand by the Government for many large refrigerating units for its chemical plant expansions, the manufacturers of large size centrifugal refrigerating machines for chemical processing and air conditioning requirements represented that they could supply such equipment at a considerable reduction in cost if they were permitted to design these machines for the use of "Freon-114" as the refrigerant.

As a result of this situation Frigidaire agreed to release the required amount of "Freon-114" for such jobs, provided Kinetic would file with Frigidaire a specific request for each job, stating the name of the manufacturer of the refrigeration equipment, the approximate size of the proposed installation, and the use for which it was required. During the period of this arrangement, which became effective with the sale of "Freon-114" to du Pont for its Louisville Neoprene Plant, each such release, with one exception, has been covered by a separate agreement executed by General Motors and Kinetic. The exception was covered by an action of the Board taken at its meeting held June 4, 1943.

Equipment charged with "Freon-114" has been installed under this arrangement by the York Corporation and the Carrier Corporation. The amount of "Freon-114" released for use in equipment manufactured by these customers was 35,600 pounds in 1942 and 13,400 pounds in 1943. Several additional large installations are now in process of construction.

Since these and other companies had now accumulated design experience covering "Freon-114" in large size centrifugal machines and had demonstrated its value as a refrigerant in such equipment, they requested Kinetic in the early part of 1943 to make "Freon-114" available for their postwar equipment of 50 or more horsepower.

This privilege, covering release of "Freon-114" to the Carrier Corporation and the Worthington Pump and Machinery Corporation, was granted in a letter from Mr. E. G. Blechler to Mr. E. G. Robinson, under date of March 24, 1943, and the privilege was further extended to the York Corporation and the Trane Company by action of the Kinetic Board taken at its meeting held June 4, 1943, as shown in the following minute:

"Release of 'Freon-114' for Use in Refrigeration Machines of 50 or More Tons Capacity of the Centrifugal Type:

"Vice-President E. G. Robinson orally advised the Board of requests received from -

50.5.1

- 1) The York Ice Machinery Company and the Frane Company for permission to offer refrigerating machines of 50 or more tons capacity of the centrifugal type, charged with 'Freon-114', to the post-war trade.
- 2) The Carrier Corporation for permission to convert one of its centrifugal refrigerating machines, now installed at the plant of the Studebaker Corporation, Aviation Engine Division, South Bend, Indiana, from 'Freon-11' to 'Freon-114'.

"Upon oral recommendation of Mr. Robinson, and after discussion, it was moved and unanimously carried that the management be authorized to release 'Freon-114' to the foregoing companies for the purposes mentioned above, and further, that the management be authorized to convert the Carrier centrifugal refrigerating machine at Deepwater from 'Freon-11' to 'Freon-114', thereby increasing the capacity of this machine from 120 tons to approximately 150 tons per day."

At the meeting of June 4, 1943, the old question of the release of "Freon-114" for all purposes was again brought up for further consideration due to the fact that manufacturers of household equipment were becoming interested in this refrigerant for postwar use. The General Motors representatives on the Kinetic Board agreed to give this matter further consideration from the Frigidaire standpoint and would report at the next regular meeting. This report was finally submitted on February 24, 1944, in the form of a suggested amendment to the General Motors-Kinetic Agreement of September 15, 1939, the original of which is attached.

Under the terms of the proposed amended agreement Kinetic would be obliged to pay to the Frigidaire Division of the General Motors Corporation an additional royalty of five cents per pound for each pound of "Freon-114" sold for use as a refrigerant, the implication being that this additional royalty would be collected by Kinetic from its customers through a corresponding increase in the selling price.

The proposed amended agreement is not acceptable to Kinetic Chemicals in its present form for the following reason: The terms used in the amendment are so general in character that they could not be clearly interpreted and administered; they, therefore, require further clarification.

The following points must be considered.

Kinetic has already been granted the authority to offer "Freon-114" to certain of its customers for postwar use in centrifugal type machines of 50 ~~horse power~~ or more. At the time this authority was granted there was no obligation set up requiring the payment of five cents per pound royalty upon such sales, so it appears that the five cent royalty imposed by the amendment under consideration must

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be restricted to sales made for use in household refrigerating machines only.

The ceiling price has been established on the sale of "Freon-114". As long as the O.P.A. is in control of price regulations it will be impossible to increase the price of any commodity beyond the established ceiling price unless it can be clearly demonstrated that the established ceiling does not provide an approved return. Under present conditions it does not appear possible to obtain an increase in the present ceiling price of "Freon-114" from O.P.A.

The proposed amendment would indicate the necessity of Kinetic selling "Freon-114" for refrigeration purposes at the price of five cents in excess of that charged for the refrigerant sold to Frigidaire. Under the Robinson-Patman Act this could not be done. Therefore, the proposed five cent royalty would become a charge against Kinetic's profits, adversely affecting the returns of both du Pont and General Motors through reduced dividends.

We are strongly of the opinion, based on past experience, that an attempt on the part of Kinetic to collect this royalty, as such, from customers who are interested in using "Freon-114" in household equipment would develop a sales resistance which would have a very serious effect on sales of other refrigerants, which, in turn, might well result in a loss to profits far in excess of any gain accruing from increased sales of "Freon-114".

It seems to me that a logical solution of this problem would be to have General Motors grant licenses direct to refrigeration machinery manufacturers of household equipment upon a royalty basis. Such an arrangement would permit Kinetic to sell "Freon-114" to such licensees, restricting sales to these licensees only.

I strongly recommend that this proposal be given careful consideration. The importance to Kinetic for a prompt solution of this problem is well expressed in the attached letter from W. W. Rhodes.

I am giving below a brief summary, showing returns realized by Kinetic from the "Freon-114" operation and returns realized by Frigidaire, General Motors, and du Pont, accruing from royalties, management fees, and dividends resulting from their investment in Kinetic. These figures indicate the value of the Kinetic investment and the importance of a prompt solution of the "Freon-114" problem in such a manner that it will no longer jeopardize the satisfactory position which Kinetic Chemicals now occupies in the refrigeration industry.

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Kinetic Chemicals began active operation on January 1, 1931.

Thirteen-year period - January 1, 1931 to December 31, 1943

"Freon-114" sold	\$ 5,332,000
Average selling price \$0.789 (1934) to \$0.527 (1941)	
Gross receipts	\$3,011,000
Total cost, including mill cost, selling expense, and administration	<u>2,357,000</u>
Net profits before taxes	\$ 654,000
Royalty returned to Frigidaire	\$ 147,194
Total royalty paid to Frigidaire	\$1,503,481
Total Management Fee paid to du Pont	510,000
Total dividends paid	\$6,369,000
Du Pont share 51%	3,248,200
General Motors share	3,120,800
Average investment - 13 years, December 31, 1943	\$ 530,000
Maximum paid in capital and surplus to December 31, 1943	
Paid in capital	\$2,000,000
Paid in surplus	1,300,000
	\$3,300,000

For Inter-Organization Letters of
FRIGIDAIRE DIVISION
GENERAL MOTORS CORPORATION

5057

April 20, 1944

Mr. E. F. Johnson, Vice-President
General Motors Corporation
Detroit 2, Michigan

Dear Mr. Johnson:

Confirming our phone conversation this afternoon, it seems to me that the simplest and most direct way of releasing Kinetic Chemicals from the effect of the License Agreement of September 18, 1939, granting General Motors the exclusive right to use Freon-114, is to cancel that License Agreement in its entirety. The effect of the 1939 Agreement is merely to grant the rights stated to General Motors. Consequently, the cancellation of that Agreement will restore the parties to the positions they held prior thereto; and prior to the 1939 Agreement, Kinetic had the power to sell Freon-114 to anyone.

Accordingly, I have drafted a form of agreement, the effect of which is to cancel and terminate the 1939 Agreement and to mutually release the parties from any obligations under the 1939 Agreement. Such draft is enclosed in triplicate.

A copy of this letter, together with a draft of the cancellation agreement, is being sent to Mr. Godfrey, and also to Mr. Spencer, with whom I understand you intend to discuss this matter this afternoon.

Yours truly,

J. Ralph Fehr
J. Ralph Fehr
Patent Department
Frigidaire Division

JRF:MM

Encls. (3).

Agreement in trip.

cc: Mr. E. R. Godfrey (Dayton)
(with encl.)

Mr. L. M. Spencer (Detroit)
(with encl.)

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May,

THIS AGREEMENT made this 18th day of April, 1944,
by and between

GENERAL MOTORS CORPORATION, a corporation of the
State of Delaware (hereinafter referred
to as GENERAL MOTORS);

and

KINETIC CHEMICALS, INC., a corporation of the State
of Delaware (hereinafter referred to as
KINETIC)

WITNESSETH, that:

WHEREAS, by an Agreement dated September 18, 1939,
KINETIC granted to GENERAL MOTORS, subject to certain
limitations and conditions set forth in said Agreement,
the sole and exclusive right and license, under the Henne
U. S. Patent No. 2,007,198, issued July 9, 1935, covering
tetra-fluoro-dichloro-ethane or its use as a refrigerant, to
use said product in, and to sell said product in or for use in,
refrigerating apparatus or equipment; and

WHEREAS, it is the desire of the parties hereto to cancel
and terminate said Agreement of September 18, 1939;

Now, THEREFORE, in consideration of the payment by
KINETIC to GENERAL MOTORS of One Dollar (\$1.00),
receipt of which is hereby acknowledged, it is mutually
agreed as follows:

1. GENERAL MOTORS and KINETIC do hereby mutually
cancel and terminate, effective immediately, said Agree-
ment of September 18, 1939.
2. GENERAL MOTORS and KINETIC do hereby each re-
lease and discharge the other from all the agreements and
obligations

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contained in said Agreement of September 18, 1939, and each acknowledges the performance by the other of all agreements and obligations contained in said Agreement of September 18, 1939, and on the part of the other party to be performed.

Effective as of this date, the contract dated May 1, 1932 between KINETIC and FRIGIDAIRE CORPORATION (to the rights and obligations of which GENERAL MOTORS CORPORATION has succeeded) is hereby confirmed and reinstated as fully as if said Agreement of September, 1939 had not been entered into.

IN WITNESS WHEREOF the parties hereto have caused this instrument to be executed in duplicate by their representatives, duly authorized, and their respective seals to be hereunto affixed as of the day and year first above written.

GENERAL MOTORS CORPORATION
By (Signature Illegible)
Vice-President

Execution Recommended

C. M. Spencer

ATTEST:

J. C. Davidson
Ass't Secretary

KINETIC CHEMICALS, INC.
By *C. D. Porch*
President

ATTEST:

M. D. Fisher
Ass't Secretary

NOTE: Italics indicate handwriting.

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E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

VICE PRESIDENT'S OFFICE

June 22, 1944.

Mr. E. F. Johnson,
General Motors Bldg.
Detroit, Michigan.

Dear E. F. -

Dusty Rhodes tells me that he has notified all large manufacturers that F 114 in the future will be available to them. They have all expressed great appreciation in having the product for test. I gather that one outfit, Sunbeam, while appreciative of the opportunity to use F 114, is inclined to stick to their design which would use F 12. I am told by Dusty that this is a sort of life-saver for Norge-Borg Warner, another manufacturer. There has been no effort at the present time to notify the trade in general. It has been deemed advisable only to let the large manufacturers have the information for the time being, chiefly because the plant in which F 114 has been made has recently been used to make another product.

We have adequate supplies for General Motors' requirements for F 114, but any rush of other demands at the present is not contemplated until such time as F 114 equipment is released from its special use.

I am told, however, that the trade was very appreciative of the action which made it possible for them to get F 114.

Yours very truly,

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To: Policy Committee
FROM: Donaldson Brown
SUBJECT: KINETIC CHEMICALS, INC.
OPERATIONS REPORT

November 9, 1944

I am enclosing for your information report prepared by Messrs. E. F. Johnson and E. R. Godfrey, covering operations of Kinetic Chemicals, Inc. from 1930 through 1943.

Respectfully submitted,

Donaldson Brown
Vice Chairman

NOTE: Handwritten initials E. L. B. appear in top left corner of page, handwritten words "Ordered filed 11/21/44," and stamp appear on top right corner of page.

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REPORT
ON
OPERATIONS OF
KINETIC CHEMICALS, INC.

from 1930 through 1943

Including
HISTORY OF DEVELOPMENT
of
FLUORINE CHEMICALS
from 1928 through 1930.

For Presentation To
THE GENERAL MOTORS POLICY COMMITTEE

by

Donaldson Brown

Prepared by
E. F. Johnson
and
E. R. Godfrey

October, 1944

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INTRODUCTION

Kinetic Chemicals, Inc., owes its existence to a research program on refrigerating agents which was begun in the Spring of 1928 for General Motors Corporation, and specifically for Frigidaire Corporation.

In view of this fact, a report on Kinetic Chemicals would not be complete without a brief review of the development by General Motors of the refrigerating agents which eventually became the foundation of the business of Kinetic Chemicals. It is thought also, that such report might well be followed by a brief consideration of the future prospects of the business of Kinetic Chemicals.

Accordingly, the material of this report is presented under three main headings or parts, as follows:

PART I - DEVELOPMENT OF FLUORINE CHEMICALS.

Under this heading will be presented briefly the need for a new refrigerant; the story of the development of fluorine (Freon) chemicals; General Motors policy regarding chemical manufacture; the organisation of Kinetic Chemicals, Inc. and the licensing of that company under Frigidaire patents to manufacture and sell the fluorine compounds; and the Frigidaire patent situation generally, including the granting of foreign sub-licences.

PART II - KINETIC CHEMICALS, INC. - ITS OPERATION.

Under this heading, we will treat the production and exploitation of the Freon compounds as refrigerants; the early difficulties incident to the introduction of these refrigerants; the expansion of the line of refrigerants; the further expansion of the business to include other fluorine

compounds and by-products; corporation statistics concerning volume of production and sales, cost reduction, capital investment, profits, dividends, royalties, management fees, facilities, and number of employees; the role of fluorine compounds in the war effort; and information of interest concerning improvement patents acquired by Kinetic; and the licensing of DuPont thereunder.

PART III - THE FUTURE OF KINETIC CHEMICALS.

Under this heading, we will consider the outlook for the business of Kinetic Chemicals, and briefly touch on some of the needs of Kinetic Chemicals for the future development and security of its business.

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PART I - DEVELOPMENT OF FLUORINE CHEMICALS

In 1926, when the research on the new refrigerating agents was begun, Frigidaire was using sulphur dioxide (SO_2) as the refrigerating agent in all of its refrigerating systems. This refrigerant had been used by Frigidaire since the beginning of the Frigidaire business ten years earlier. It was also used by Frigidaire's leading competitors. Other refrigerants also in common use were methyl chloride (CH_3Cl), ammonia (NH_3), butane (C_4H_{10}) and others.

Need for New Refrigerant

For some years the Frigidaire management had been dissatisfied with sulphur dioxide due to the fact that, like the other known refrigerants, it was hazardous from a health standpoint, even in small concentrations. The introduction of such hazards into millions of homes was undesirable. Sulphur dioxide was probably the least hazardous of the refrigerants from a practical standpoint owing to its extremely irritating sulphur odor which acted as a warning agent to persons who might be exposed to it. Methyl chloride, one of the other refrigerants in common use, being toxic and having no pronounced odor had been the cause of a number of deaths. Some refrigerants were also inflammable and their use introduced fire hazards into the home. Because of the few serious accidents resulting from escaped refrigerants, particularly methyl chloride, the industry was entering upon an era of damage suits because of ills attributable to exposure or imagined exposure to escaped refrigerants. A new and safer refrigerant was definitely needed.

Search for New Refrigerant Begun

It was under these circumstances and to meet the needs of Frigidaire that Mr. C. P. Kettering, in the Spring of 1926, commissioned Mr. Thomas Midgley, Jr., on behalf of Frigidaire, to undertake a research project for the purpose of finding a new refrigerating agent particularly suitable for domestic refrigeration.

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After conferring with Frigidaire representatives, Mr. Midgley set down the following specification of requirements for the new refrigerant:

Requirements of primary importance.

- (1) To have a suitable boiling point.
- (2) To be non-poisonous (non-toxic).
- (3) To be non-inflammable.
- (4) To have a distinct but not unpleasant odor.

Requirements of secondary importance, if compatible with the primary requirements.

- (5) To be immiscible with lubricating oils.
- (6) To be as inexpensive as possible.

Following an extensive study of the literature of the chemical elements, their compounds, and their properties where known, (as well as their probable properties, where unknown) Mr. Midgley and his associates, Dr. A. L. Henne and Mr. R. R. McNary, working in a private laboratory in Dayton, Ohio, came to the conclusion that the chloro-fluoro derivatives of methane (CH_4) might have interesting possibilities.

Certain of the chloro-fluoro derivatives of methane were synthesized. After further work it was discovered that by varying the chlorine, fluorine and hydrogen content in such derivatives of methane, the toxicity, inflammability, and the boiling point of the resulting compound could be varied almost at will. These discoveries eventually led to an intensive study of the halo-fluoro derivatives of ethane (C_2H_6), propane (C_3H_8) and butane (C_4H_{10}).

Freon 12
(Dichloro-difluoro-methane)

One of the first refrigerants produced, the one now known as Freon 12 (dichloro-difluoro-methane, or CCl_2F_2), has proved to be the one best suited for general use in the domestic refrigeration field and in other fields not requiring the production of extremely low temperatures. Upon the discovery of Freon 12 and the preliminary determination of its properties, it appeared to be "the" refrigerant that

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we had been looking for. It met all the primary requirements for the new refrigerant. It had a suitable boiling point, it was non-inflammable, it had a distinct but not unpleasant odor, and a preliminary investigation by Dr. Robert A. Kehoe at the University of Cincinnati Medical College with live rabbits showed the refrigerant to be remarkably non-toxic. However, it is to be noted that it met neither of the secondary requirements for the new refrigerant, because it was relatively expensive, and it was miscible with lubricating oils in all proportions, a property which was later turned to advantage in the use of the refrigerant and the design of refrigerating apparatus. The above work, which might be termed the first phase of the development, was carried out in 1928.

Second Phase of Development -
Semi-Commercial Production.

During the second phase of the development, running through 1929 and into the early part of 1930, Mr. Midgley and his associates continued their work with Freon 12 to develop suitable manufacturing processes. They also continued their investigation of the other derivatives of methane, and of the derivatives of ethane, propane and butane.

While this was going on, a group of physical chemists working in the Frigidaire laboratories were making a complete and detailed determination of the physical properties of Freon 12 such as the exact boiling point, freezing point, densities of liquid and of vapor, vapor pressure, specific heats of the liquid and of the vapor, the thermodynamic properties for refrigeration use, and so on. They supplied stability data at different temperatures. They also determined corrosion characteristics of Freon 12 with various metals found in refrigerating systems, such as high and low carbon steels, aluminum, copper, monel metal, tin, zinc, tin-lead solders, various bronzes, brasses and magnesium alloys, both when the Freon 12 was pure and when contaminated as with water. Since damage caused to flowers,

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foods and furs by escaped refrigerants had been the cause of many damage claims, the chemists determined the effects of the new refrigerant on these and many other articles.

By the fall of 1929, small production of Freon 12 had been carried out—enough to meet the requirements for laboratory tests, to charge a refrigerating machine, and to supply the U. S. Bureau of Mines with their requirements for more complete and more detailed tests on toxicity than had theretofore been made.

Plans were made for a semi-commercial plant to cost up to \$25,000 with a capacity of 4,000 pounds of Freon 12 per month, and such a plant was put into operation by Frigidaire at Dayton, Ohio, during the fall and winter of 1929-1930.

Announcement of Freon 12 to the Public

Freon 12, or dichloro-difluoro-methane, was first announced to the public as one of a new class of refrigerating agents, through a paper entitled "Organic Fluorides as Refrigerants" by Thomas Midgley, Jr., and Albert L. Henne, which was presented by Mr. Midgley on April 8, 1930 at the annual meeting of the American Chemical Society, at Atlanta, Georgia. At that meeting, Mr. Midgley demonstrated the non-inflammability of Freon 12, and also its non-toxicity by breathing it.

The paper and the demonstration were received with applause by the chemists, and with much public comment in the press reports of the presentation.

Here was a remarkable group of safe refrigerants founded (to the astonishment of the chemical world) upon fluorine, an element which had heretofore been regarded as one of the most dangerous and destructive elements in existence.

A reprint of the above paper is attached as Exhibit A in the appendix, Part IV of this report.

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Third Phase of Development -
Full Scale Production

By the spring of 1930, the work had progressed sufficiently to justify the Frigidaire Management in proceeding with its plans for the use of the new refrigerant in the production of Frigidaire refrigerating systems. By this time, too, it was becoming clear that because of the revolutionary character of the new refrigerant and its great benefit to humanity in eliminating a hazard to health and fire in the home, it would be necessary, as a matter of public policy, to make the refrigerant available to the entire refrigeration industry.

The Corporation was at once faced with the question as to whether the new plant which was needed for the full scale production of Freon 12 should be built and operated by Frigidaire at Dayton, Ohio, or whether the entire manufacturing process should be turned over to a chemical manufacturer upon a royalty basis.

G.M. Policy on
Chemical Manufacture

On this question of manufacturing Freon 12, Mr. John L. Pratt, then Vice-President of General Motors, stated that up to that time General Motors had more or less elected to confine its operations to the mechanical side of manufacture, and that it would be quite a fundamental step to start chemical manufacture. Mr. Pratt proposed to discuss the matter with Mr. Sloan, and evidently the decision was against General Motors undertaking chemical manufacture. A plan was soon evolved by which General Motors and the DuPont Company would join in the exploitation of Freon 12, thus combining the patent position of General Motors with the chemical "know how" of DuPont.

Organization and Licensing
of Klorite Chemicals, Inc.

On August 27, 1930, a formal Agreement was entered into between General Motors Corporation and E. I. DuPont de Nemours & Company providing for the formation of

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a jointly owned new company (Kinetic Chemicals, Inc.) to carry on the business of manufacturing and selling fluorine compounds, and for the granting by Frigidaire Corporation of an exclusive license under Frigidaire's patents and inventions relating to fluorine chemicals. The principal features of the Agreement were the following:

State of Incorporation: Under laws of Delaware.

Powers of Corporation: Manufacture and sale of "said products", being -

- (a) Halogenated Hydrocarbons containing at least one Fluorine atom.
- (b) Fluorine compounds used or intended to be used in motor fuels.

Board of Directors: Three from DuPont and two from General Motors. Total of five.

Authorised Capitalisation: 20,000 shares common stock of \$100.00 par value.

Ownership of Stock: DuPont 51%, and GM 49%, payable at par in cash at time and in amounts called for by Board of Directors of Kinetic.

Management and Fees: DuPont responsible for production. To receive management fee of \$50,000 per year for five years beginning January 1, 1931 as full compensation for "know how."

Note: By action of the Board of Directors of Kinetic, the management fee has been continued from time to time and is now on the basis of \$40,000 per year on gross sales of \$2,500,000 or less, plus 4/10 of 1% on sales in excess of \$2,500,000.

Plant Facilities: Kinetic to operate semi-commercial plant owned by Frigidaire at Dayton, Ohio.

Note: Kinetic took over Sept. 1, 1930.

Patents Rights:

Frigidaire - GM to have Frigidaire Corporation grant exclusive license to Kinetic under Frigidaire inventions pertaining to "said products", and to receive royalty for 17 years only, beginning January 1, 1931, of 5% of selling price of all "said products" except on sales to Ethyl Gasoline Corporation.

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DuPont - Provision made for grant by DuPont of certain rights to inventions developed by DuPont pertaining to "said products".

General Motors - General Motors' future chemical developments (other than "said products") to be offered to Kinestic.

Note: Opinion of May 29, 1944, by John Thomas Smith is to effect that this provision of the Main Agreement is not enforceable. He has recommended to Mr. Sloan the elimination of this provision.

Pursuant to the General Motors - DuPont Agreement of August 27, 1930, Frigidaire Corporation granted to Kinestic, on May 1, 1932, an exclusive license under thirty-one United States patent applications and any foreign patents corresponding thereto. The list of Frigidaire patents comprehended within the Kinestic license as of October 1, 1944 comprises:

24 United States patents
of which the main patent expires November 24, 1948, and the others expire at varying dates to January 16, 1955.

71 Foreign patents
distributed in thirty-seven different foreign countries.

Amendments to Main GM-DuPont Agreement
of August 27, 1930

Amendment of September 6, 1938. By this amendment, General Motors extended the Main Agreement of August 27, 1930, by empowering Kinestic to grant to I. G. Farbenindustrie Aktiengesellschaft, of Germany, an exclusive license under German and Austrian patents to make, use and sell refrigerant chemicals only for refrigeration purposes in Germany and Austria. License subject to certain exceptions and reservations to permit importation of refrigeration equipment into Germany and Austria, and to otherwise protect Frigidaire business. Royalty 5¢ per pound.

Amendment of September 18, 1939. This amendment formalized a business arrangement, in effect since 1932, by which Frigidaire purchased Kinestic's entire output of

Freon 114 (tetrafluoro-dichloro-ethane), and granted GM the exclusive use of Freon 114 for refrigeration purposes. The exclusive license to GM was in recognition of the great expense incurred by Frigidaire, after the grant of the main license, in synthesizing Freon 114, developing manufacturing processes, and in determining its thermodynamic, physical, and engineering properties. This agreement was terminated May 18, 1944.

Amendments of November 16, 1942, April 10, 1943, June 26, 1944 and September 15, 1944. By these amendments, GM authorized Kinetic to grant limited licenses to Westinghouse Electric and Mfg. Co., and four other companies to manufacture insecticide dispensers, using Freon 12 (on which Kinetic pays GM the regular royalty), for sale only to the U. S. Government for the duration of the war and six months thereafter. Further information concerning insecticide dispensers is contained in Part II of this report.

Royalty Income to General Motors

The royalty income received by General Motors under its license to Kinetic Chemicals based on sales for the years 1931 to 1943 inclusive has totaled \$1,503,019, as shown in detail by years in Table No. 6 in Part IV of this report.

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PART II - KINETIC CHEMICALS, INC. - ITS OPERATION

This part of the report covers the period following the Agreement of August 27, 1930, between General Motors and DuPont, providing for the organization of Kinetic Chemicals, Inc., and the licensing of the new company under Frigidaire patents.

The material presented in this part of the report is gathered primarily from the financial reports of Kinetic Chemicals for the years 1931 to 1943, inclusive, supplemented by annual reports for the years 1932, 1933 and 1934.

September 1, 1930.

Kinetic Takes Over Frigidaire
Semi-Commercial Plant

On September 1, 1930, Kinetic Chemicals took over the operation of the Frigidaire semi-commercial plant at Dayton, Ohio, for the manufacture of Freon chemicals. It continued the operation of this plant until February 11, 1932, on which date the building and contents were destroyed by fire, after which the manufacturing operations were transferred to a plant near Wilmington, Delaware.

Refrigerants Manufacture.

Kinetic continued and expanded the manufacture of Freon 12 refrigerant at the Dayton plant primarily to meet the requirements of Frigidaire, which had begun using this refrigerant in its refrigerators, and in 1931 Frigidaire purchased from Kinetic 1,173,000 lbs. of refrigerant, which represented 99.3% of Kinetic's total business in that year.

Safety Code Difficulties

By 1932, Kinetic had signed contracts with seven refrigerator manufacturers besides Frigidaire for the use of its products. Notwithstanding this, the business of Kinetic suffered a severe contraction in 1932 as will be seen from Table 1. In that year, the business was only about 35% of 1931 and Frigidaire's purchases dropped to

347,000 lbs. for the year.

The decrease in business in 1932 was due to several causes. First, organized opposition to sales of refrigerating equipment charged with Freon, culminating in the successful blocking of the adoption of satisfactory code regulations, particularly by the American Standards Association and the New York City Fire Department. Second, excessive service costs experienced by Frigidaire due to difficulties in holding the refrigerant charge in its machines, which were then of the non-hermetically sealed type.

In regard to the organized opposition, certain competitors were believed to be at the bottom of this. Opposition was based upon the fact that when Freon is exposed to an open flame, as in a fire, there is some disassociation resulting in the liberation of free fluorine. This was asserted to be a health hazard, but in due course in tests made by Kinetic and by the National Board of Fire Underwriters, this hazard was demonstrated to be negligible for practical purposes. By the end of 1933, the organized opposition had disappeared, satisfactory codes had been adopted or were in process of adoption by the various large cities, and many of those who had previously fought the recognition and acceptance of Freon as a refrigerant had contracted with Kinetic for substantial quantities.

Other Refrigerants

Introduced

Various other fluorine refrigerants were manufactured by Kinetic from time to time to meet the requirements of the refrigeration industry. Table 1 shows the introduction of Freon 11 (CCl_3F) in 1932. This is a low-pressure refrigerant particularly suitable for centrifugal type compressors.

In 1933, Kinetic began the manufacture of Freon 114 ($C_2Cl_2F_4$) for Frigidaire. This refrigerant was synthesized and developed by Frigidaire for its own use. It is

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probably the only completely "tailored" refrigerant ever produced to meet certain specified conditions. Frigidaire purchased Kinetic's entire output of this refrigerant and, as explained in Part I, this informal arrangement was formalized by granting Frigidaire an exclusive license for the use of this refrigerant, which license continued until May 18, 1944.

Other refrigerants were introduced and sold at various times, including Freon 22, Freon 21, Freon 31, Freon 113 and Freon 142.

On Table I, it will be seen that the total volume of refrigerants manufactured by Kinetic increased from 1,181,822 lbs. in 1931 to 18,693,390 lbs. in 1943, and aggregated 94,379,070 lbs. for the 13 years.

Freon 12.
New Use in
Aerosol Insecticide

Attention should be called to the notable expansion which occurred in the sale of Freon 12 after 1941, and at a time when the use of Freon refrigerants, as refrigerants, was being restricted by Government regulation due to the war. The extent of this restriction may best be seen in Table I by noting the sales of Freon 114 after 1941, this refrigerant being used (by Frigidaire) only in domestic refrigerating equipment. The contrary trend in the sale of Freon 12 may be noted in the same table.

The increased sales of Freon 12 are due to the fact that a new use was found for this chemical in Aerosol insecticide, which is used in large quantities by the U.S. Government to protect the health of American troops in the tropics. Further details regarding Aerosol are given in the Section entitled Fluorine Compounds in the War.

By-Products Introduced

In the course of the manufacture of refrigerants, certain by-products were developed

and sold from time to time. The principal of these by-products consisted of hydrofluoric acid, such acid falling into the three classifications of strong, weak, and special distilled. There was also fluorosilicic acid. Another classification of by-products was produced, known as fluorides. These were zinc silico fluoride, and magnesium silico fluoride.

Table I has been extended to include eight months of 1944. Of the total business done by Kinetic, including the eight months of 1944, it is to be noted that the business is distributed as follows:

Refrigerants	117,822,748 lbs.	86.56%
Acids	15,091,651 lbs.	11.09%
Fluorides	3,203,177 lbs.	2.35%
Total	136,117,576 lbs.	100.00%

Program in Cost Reduction

With the expansion in volume, the cost of refrigerant production has been greatly reduced. In 1931, the average sales price of Freon 12 was \$.6112 per lb., as compared with a price of \$.05 per lb. for sulphur dioxide, the refrigerant then in most common use. The reduction in sales price of Freon 12 proceeded at a rapid rate until 1938 after which it stabilized in the \$.25 to \$.27 area. For the year 1943 the average price was \$.2610 per lb. The sales price of Freon 114 was similarly decreased. In 1933 Freon 114 sold at \$.7784 per lb. and in 1943 it had been reduced to \$.5338 per lb. The detail for these two refrigerants is shown in Table 2 of the Appendix.

Dollar Volume of Sales by Kinetic

The dollar volume of sales by Kinetic from 1931 through eight months of 1944 is shown in Table 3 of the Appendix. Sales increased from \$726,147 in 1931 to \$6,459,581 in 1943, aggregating for the thirteen years \$34,511,485. Table 3, like

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Table 1, has been extended to include eight months of 1944. The sales for thirteen years and eight months, by classes of products and services, and the percentage of each class as a whole are as follows:

Refrigerants	\$34,719,864	82.28%
Acids	2,717,845	6.44%
Fluorides	322,591	.77%
Small Cylinder Service	2,918,936	6.92%
Warehousing		
Service F-12	1,502,501	3.56%
Fluorspar	13,596	.03%
Total Net Sales	<u>\$42,195,333</u>	<u>100.00%</u>

Statement of Assets

Reference is made to Table 4 in the Appendix which shows the gradual and continuous expansion of total assets from \$457,974 at the end of 1931, to a total of \$12,036,438 on August 31, 1944. The assets of Kinetic according to classification of accounts stood as follows on August 31, 1944:

Plant and Equipment	\$6,436,636
Working Capital	5,513,263
Other	<u>86,519</u>
Total Assets	\$12,036,438

Profit and Loss Position

The profit and loss position of Kinetic for the years 1931 through 1943, and for the first eight months of 1944 is shown in Table 5 of the Appendix. There was a net profit in each year except during 1932 and 1933, which was the period of difficulties with the code and learning how to prevent the loss of neon refrigerants from the so-called open type of refrigerating machines. The net profit was \$235,453 for 1931, the first year of operation, and expanded to a high of \$980,798 in the year 1940. Due to high taxes, it fell to \$480,294 in 1943, or 7.44 percent of sales as compared with a 13-year average of 20.01 percent. The aggregate net profit for the thirteen years and eight months may be summarized as follows:

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Net Sales	\$42,195,333.00
Net Profit on Sales	12,868,007.00
Other Income	87,101.00
Operating Profit	12,955,108.00
Taxes, Etc.	5,651,839.00
Net Profit	7,303,269.00
% of Sales	17.31

Royalties,
Management Fees,
Dividends

The royalties, management fees and dividends paid out by Kinetic are shown in Table 6 of the Appendix.

The patent royalties received by Frigidaire based upon 5% of the net sales by Kinetic have increased with the business and total \$1,503,019 for years 1931 through 1943.

The DuPont management fee was originally set, in the G.M.-DuPont Agreement of August 27, 1930, at \$50,000 per year for five years, subject to reduction and proportional-payment along with royalties if the income should prove to be insufficient to pay both in full. In accordance with the above, no royalty and no management fee were paid in 1932 and 1933. By action by the Board of Directors of Kinetic the DuPont management fee was twice extended at the rates indicated for the years 1936 through 1943. By recent action of the Kinetic Board of Directors, the management fee was established on a sliding scale, and is now \$40,000 per year on gross sales of \$2,500,000 or less, plus 4/10 of 1% on sales in excess of \$2,500,000.

The total expenses of Kinetic on account of ~~Royalties~~ and management fees for thirteen years, 1931 through 1943, including amounts accrued for eight months of 1944, may be summarized as follows:

Frigidaire Royalty	\$1,845,460
DuPont Management Fee	560,735
Total	\$2,406,195

Table 6 shows the dividends declared by Kinetic through 1943 and the proportions

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paid to General Motors and DuPont. The dividends reflect the large increase in taxes in 1942 and 1943. The totals declared for thirteen years may be summarised as follows:

Paid to DuPont	(51%)	\$3,248,190
Paid to General Motors	(49%)	<u>3,120,810</u>
Total		\$6,369,000

Return on Invested Capital

Table 7 of the Appendix shows the capital invested by General Motors in Kinetic, dividends received, and return on invested capital for each of the thirteen years 1931 through 1943.

Ratio of Frigidaire Purchases

The position of Frigidaire as a customer of Kinetic Chemicals is believed to be of interest to General Motors. This is shown in Table 8 of the Appendix which indicates for each year the total sales of refrigerants by Kinetic, the total purchases by Frigidaire, and the percentage relationship of Frigidaire purchases to total Kinetic sales.

It is to be noted that Frigidaire was practically the only customer for Freon refrigerants during 1931 with purchases of 99.26% of the total. With expansion of sales to other refrigerator manufacturers, the Frigidaire percentage dropped year by year and stood at 18.35% in 1941, the last year of full refrigerator production prior to the war.

From the above it appears that Frigidaire was largely responsible for sustaining Kinetic Chemicals during the first four years of its existence.

Expansion of Facilities

As already stated Kinetic Chemical's manufacturing facilities in the beginning of

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its operations consisted of the small semi-commercial plant at Dayton, Ohio which it took over from Frigidaire on September 1, 1930 and operated until it was destroyed by fire on February 12, 1932.

After February 1932, Kinetic's main plant was established at Deepwater, near Wilmington, Delaware. Shortly thereafter, a hydrofluoric acid plant was added. In 1933, a plant was built for the manufacture of Freon 114. This was followed by a plant for charging small cylinders.

To insure an adequate source of raw materials, Kinetic early purchased a mine in Arizona containing large deposits of fluorspar.

There were no further large plant additions until 1944 when the increased demand for Freon 12 for use in aerosol necessitated a large increase for facilities. To meet this demand, a second Freon 12 plant was opened at Deepwater in early 1944. This doubled the capacity. In August, 1944, a third plant was brought into operation at East Chicago, Illinois, and with this plant the Freon 12 capacity was tripled. However, there was no corresponding hydrofluoric acid plant capacity to meet the requirements at East Chicago, the Government having awarded the hydrofluoric acid plant to another company which has failed to meet requirements, and as a result the output of the East Chicago plant is far below capacity.

Employees

The number of persons in the direct employ of Kinetic stood at five hundred and ninety eight on August 31, 1944.

Fluorine Compounds in the War

Fluorine compounds are finding important new uses in the war effort. The two principal such uses will now be described.

(1)(b)

Aerosol insecticide with Freon 12. Attention has already been called to the large expansion of Freon 12 sales since 1942 and at a time when the sales of other refrigerants was being restricted. This expansion is due to the use of Freon 12 not as a refrigerant but as a dispersing agent in what is known as "Aerosol" insecticide. It is understood that Aerosol insecticide was developed by an agency of the United States government for the purpose of protecting American troops from malaria and other tropical diseases transmitted by the bite of insects. Aerosol consists essentially of a mixture of liquid Freon 12 and the chemical known as pyrethrum contained in a small one-pound sealed container. Aerosol is used by permitting the mixture to escape into the atmosphere through a small orifice. In this operation, the Freon 12 acts as a propellant for ejecting the liquid mixture, and on its escape it vaporizes and spreads rapidly by diffusion. The effect is to also diffuse the pyrethrum, which latter chemical kills the insects. The diffused Aerosol vapor blankets the area where it is used and thus protects the troops by not only killing insects in the area but also by preventing other insects from entering the area. It is understood that a three-second release will destroy all insects inside an army tent.

It is in the use of Aerosol that Freon 12 attains perhaps its greatest value to humanity. The research begun in 1928 merely for the discovery of a refrigerant of low toxicity brought forth Freon 12, and its remarkable property of being from 300 to 500 times less toxic than the known refrigerants then in common use has now made it most valuable as a harmless atmosphere for the protection of the health of American troops.

By amendment to the original General Motors-DuPont Agreement of August 27, 1928, Kinetic has been licensed under Frigidaire patents to grant sublicenses for the duration to Westinghouse Electric and Mfg. Co. and four other companies to manufacture insecticide dispensers using Freon 12; for sale only to the U. S. government.

We have no record of the exact usage of Freon 12 for this purpose, but such use may be estimated from the following tabulation of royalties received by General Motors on Government business, which royalties, except for a small undetermined part, are attributable to the sale of Freon 12 in Aerosol:

<u>Year of Sales</u>	<u>Total Royalty for Year</u>	<u>Portion on Government Business</u>
1942	\$201,185.00	\$ 67,968.00
1943	272,529.00	192,023.00

The usage of Freon 12 in Aerosol has steadily increased during the current year.

Hydrofluoric Acid. A process has been developed for the use of concentrated or special distilled hydrofluoric acid as a catalyst in the production of high-octane gasoline for airplane engines. This process came into production in 1943 and has made such large demands on Kinetic's output of hydrofluoric acid as to restrict the output of Freon 12.

Kinetic Improvement Patents

The patent position of Kinetic Chemicals has been strengthened since the organization of the business by the acquisition of improvement patents. Consonant with the spirit of the main GM-DuPont Agreement of August 27, 1930, DuPont has carried on such research and development work for Kinetic as it has been requested to do. Such work has been at the expense of Kinetic, and any inventions and patents resulting therefrom have accrued to Kinetic.

In addition, the Main Agreement of 1930 provides that DuPont shall without cost grant to Kinetic an exclusive license under any patent it may own or control to manufacture, use and sell "said products" under such patent for use in (1) mechanical operations where volatility is a factor, or (2) for use as solvents.

Many foreign patents have been taken out corresponding to the United States patents.

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The patent position of Kinetic may be summarized briefly as follows:

	<u>U. S. Patents</u>	<u>Foreign Patents</u>
Licensed by Frigidaire	24	71
Owned by Kinetic	28	37
Licensed by DuPont	2	6

Kinetic Licenses DuPont
Polymer Patent (Plastics)

Out of the Kinetic research work recently has come a patent (Plunkett 2,230,654) for polymerized tetrafluoroethylene, the polymers of which (except one) are classified as plastics. One of the polymers is a plastic having extraordinary properties of resistance to acid and heat.

At the request of DuPont, Kinetic, on January 19, 1943, granted an exclusive license to DuPont under this patent at a royalty of 3-1/2% of the selling price of polymerized tetrafluoroethylene sold under the license.

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PART III - THE FUTURE OF KINETIC CHEMICALS

The outlook for Kinetic Chemicals appears to be promising not only in the line of its regular refrigerant business but also in the prospects for developing new fields of use for its fluorine chemicals.

Refrigerants

The peacetime business has consisted mainly in the sale of refrigerants which, together with the incidental cylinder and warehousing services, has accounted for over 90 percent of its dollar sales volume. While the manufacture and sale of refrigerating equipment is now greatly curtailed as the result of government war restrictions, the refrigeration industry is anticipating a substantially increased market for its products after the war, not only in the increased sales of existing lines and types of refrigerating equipment, but also through the extension of refrigeration.

The sale of Freon refrigerants may be expected to expand in proportion with the increased use of refrigerating equipment.

New Market

In addition to the sale of refrigerants, it is to be expected that more and more uses will be found for these remarkable fluorine compounds. The fluorine compounds are so new and so unfamiliar to chemists generally that their possible applications to various processes and uses are not yet fully appreciated. Such new applications result from experimentation, and as new applications are discovered these suggest still further experiments and applications to others. As examples of new applications, reference might be made to the use of Freon 12 as a component of the Aerosol insecticide mixture, and the more recent use of concentrated hydrofluoric acid as a catalyst in the manufacture of high-octane gasoline, as reported on pages 19 to 21 of this report. The recent discovery of a fluorine

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polymer having extraordinary properties as a plastic suggests that new fields will be open in this direction also for fluorine compounds.

The field of use of fluorine compounds has apparently just been scratched. Its possibilities are unknown, but conceivably general fields of use for fluorine compounds might place the sale of fluorine refrigerants in a secondary position.

Research Program

A phase of the Kinetic business which deserves increased consideration is the policy concerning research and engineering development. In the past, the research work of Kinetic Chemicals has been carried out in the laboratories of the DuPont organization under a provision of the General Motors-DuPont Agreement of August 27, 1930, which provides for such work at the request and at the expense of Kinetic, all patents resulting from such work to belong to Kinetic.

While satisfactory progress has been made under this arrangement, the amount of research and development work carried out under this arrangement has been too limited. It has been inadequate in the development of the "sales service" or engineering type of information needed by Kinetic's customers in the development and improvement of refrigerating apparatus. These problems revolve around the available Freon refrigerants and the conditions or limitations of their use. Examples of such problems in urgent need of solution are: the prevention of corrosion in systems using Freon, involving the determination of the presence of acids in the systems, their source, and elimination or neutralization; determination of the stability (or disassociation) of refrigerants under the high temperatures found in the compressors of sealed systems; source and elimination of non-condensable gases in system; the discovery or development of lubricants which will not break down under the heat developed in larger air-cooled refrigeration systems; determination of the water tolerance of refrigerants and the development of inhibitors to prevent

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frosting of water that cannot be excluded from system, or the development of more water-tolerant refrigerants; development of dryers, absorbers and adsorbers to protect against corrosion and decomposition in Freon systems; finding or developing higher-heat-resisting wire insulations, impregnants, binders and slot protectors for motors of sealed systems; development of refrigerants better adapted for secondary systems; development of refrigerants which will not break down in heat-operated absorption systems, or of stable heat transfer protective fluid for such systems.

The examples above given are representative of the wide variety of the engineering problems which present themselves in connection with the refrigerant business. The answers to problems such as these are urgently needed if the refrigeration industry, on which Kinetic now depends so heavily, is to enjoy the large expansion and the extension which seems possible within the next ten years. In addition there are the continuing researches relating to operating plant processes, the development of new refrigerants, and the development of new or improved processes of manufacture. This work indicates the need for a comprehensive long term research and development program, not only to provide needed technical aid and service to customers but to strengthen the position of Kinetic in its field through the acquisition of improvement patents that will doubtless result from this work. To neglect this work and the reinforcement of the patent position is to invite the competition from more progressive competitors after the expiration of the main Frigidaire patent in 1948.

The best method of advancing a development and research program is, of course, through the establishment of a laboratory completely under the control of and devoted entirely to the work of Kinetic, and staffed with certain personnel or groups whose duty it would be to keep in the closest possible touch with the needs of the industries they serve. The lack of adequate contact with the problems and advance

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thinking of the refrigeration industry is probably the main reason for the absence of a better balanced research and engineering program in the past.

The requirements for a more complete engineering program, as outlined above, were presented by Messrs. E. F. Johnson and E. R. Godfrey, as directors of Kinetic, to the directors and officers of Kinetic and to several representatives of DuPont at a meeting in September of this year, and certain of the problems are already under consideration as projects by DuPont. It remains to be seen whether the plan now in use of farming out projects to the chemical DuPont laboratories will prove to be adequate for the broadened chemical and engineering program of Kinetic, and whether this plan will insure the maintenance of a constantly revised forward looking program for the security of the Kinetic business.

April 23, 1945

MR. E. K. GLADDING, DIRECTOR
DEVELOPMENT DEPARTMENT

KINETIC CHEMICALS, INC.
REPORT D-1193, FEBRUARY 20, 1945

It seems to me that the conclusion which you reach in this report; namely, that it would be advisable to take up with the Executive Committee the desirability of attempting to purchase General Motors' interest in Kinetic is sound and I would suggest accordingly that you take the step, presumably by sending to the Committee a copy of the report in question.

Certainly if a figure satisfactory to both parties can be arrived at in negotiation with General Motors it would be desirable to take this step in order to avoid the possibility there would be serious overlapping by the Kinetic fields and duPont interests in the fluorine chemicals in the future.

Probably in your letter transmitting the report to the Committee you will wish to give them an approximate idea as to a figure which ought to be acceptable to the duPont Company as a purchase price for General Motors' 49% interest.

E. G. ROBINSON
GENERAL MANAGER

Letterhead of
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

ADVICE OF ACTION

Mr. E. K. Gladding, Director
Development Department

Copies to Mr. W^l. S. Carpenter, Jr.

Mr. J. B. Eliason
Mr. H. C. Haskell
Mr. C. D. Porch
Mr. E. G. Robinson

SUBJECT

QUESTION OF ACQUIRING GENERAL MOTORS CORPORATION'S
49% INTEREST IN KINETIC CHEMICALS, INC.

ACTION TAKEN BY Executive Committee

AT MEETING HELD May 2, 1945

REMARKS

Referring to your report of April 28th, on the above subject:

After full discussion, it was moved and unanimously carried that the report be ordered filed; and that the following resolution be adopted:—

RESOLVED, that W. S. Carpenter, Jr., President, be authorized to advise General Motors Corporation that the du Pont Company is prepared to discuss with them the question of the elimination of Paragraph 7 from the

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agreement between du Pont and General Motors, dated August 27, 1930, relating to the development of the business of manufacturing and selling fluorine compounds and other chemicals, and that if it should be the expressed feeling of General Motors Corporation that they desire to dissolve the partnership by the sale of their interest in Kinetic Chemicals, Inc. to the du Pont Company, du Pont will also be prepared to discuss that situation with them.

M D Fisher
Sec'y Executive Committee

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NOTE: The date of receipt is in the upper center. Two handwritten signatures are crossed out in the upper right hand corner. A handwritten check appears before the name "Mr. C. D. Porch". A handwritten signature appears in the lower right hand corner. Italics indicate handwriting.

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Copies to:

Mr. J. B. Eliason Mr. C. D. Porch
Mr. H. C. Haskell Mr. E. G. Robinson

TO: EXECUTIVE COMMITTEE
FROM: DEVELOPMENT DEPARTMENT

SERIAL NO. S-2714

APRIL 28, 1945

QUESTION OF PURCHASING GENERAL MOTORS CORPORATION'S
49% INTEREST IN KINETIC CHEMICALS, INC.

Since August 27, 1930, General Motors Corporation and du Pont have owned (G.M. - 49% and du Pont - 51%) and have jointly contributed to the successful operation of Kinetic Chemicals, Inc. By the agreement of that date, the management of the company was given to du Pont and in the intervening fifteen years no insoluble problems in policy have arisen.

Because du Pont interest in organic fluorine compounds had not developed in 1930, the definition of the field for Kinetic Chemicals, Inc., namely,

(a) Halogenated hydrocarbons containing at least one Fluorine atom "

(b) Fluorine compounds used or intended to be used in motor fuels

seemed to be adequate and did not appear to restrict any du Pont activity. Now, however, du Pont is extremely interested in developments involving fluorine compounds and is making large research expenditures which may result in a practical collision of interests between General Motors and du Pont.

The same reasoning which prompted the purchase of minority equities in other partially-owned subsidiaries such as Eastern Alcohol, du Pont Pathé Film, and Bayer Semesan Company, suggests that it is prudent to consider the acquisition of the General Motors' interest in Kinetic to the end that du Pont may develop without restriction in this chemical field.

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In the attached Development Department Report D-1193, dated February 20, 1945, are reviewed the articles from the 1930 agreement which might lead to conflict in interpretation. A revision of the agreement with the object of tailoring it to 1945 conditions is less desirable than an outright purchase of the minor shareholdings.

Although the net worth of Kinetic is shown to be approximately \$5,000,000 on December 31, 1944, no final conclusion regarding the value of the General Motors' interest is presented in view of the uncertainties of future taxes and post-war business. It is believed that du Pont as purchaser would be in a better bargaining position at the moment and before any modification of the excess profits tax.

RECOMMENDATION

It is the recommendation of this Department, seconded by the Organic Chemicals Department, that your Committee authorize the Development Department to undertake negotiations with General Motors Corporation for the purpose of acquiring its 49% interest in Kinetic Chemicals, Inc.

APPROVED BY:

E. K. Gladding

PREPARED BY:

Homer H. Ewing

2813.

TO: E. K. GLADING, DIRECTOR
 FROM: DAVID W. JAYNE

SERIAL NO. D-1193
 FEBRUARY 20, 1945

KINETIC CHEMICALS, INC.

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List of Exhibits

ARTICLES FROM AGREEMENT BETWEEN DU PONT AND
 GENERAL MOTORS OF AUGUST 27, 1930

A

SALES, EARNINGS, ETC. - KINETIC CHEMICALS, INC.

B

BALANCE SHEET - DECEMBER 31, 1944

C

POSTWAR FORECAST OF "FREON" SALES

D

KINETIC CHEMICALS, INC.INTRODUCTION

This report was prepared at the request of Mr. E. G. Robinson, General Manager of the Organic Chemicals Department. Its objective is to determine whether or not there is justification for recommending negotiating with General Motors for the purchase by du Pont Company of the 49% interest in Kinetic held by General Motors. For this purpose it is not necessary to review in detail all the history and past activities of Kinetic which have been reviewed in other reports, and which are known to the management of the Organic Chemicals Department.

The features of the 1930 agreement with General Motors by which Kinetic was established, which are pertinent to this objective, are reviewed, as well as the current problems arising from cross-currents of interest of du Pont and Kinetic in the field of fluorine chemicals. No attempt has been made to reach a conclusion as to the price which the du Pont Company may be justified in paying for General Motors' interest as it is believed this feature can be more adequately reviewed if negotiations are authorized and General Motors' ideas are first obtained.

PERTINENT ARTICLES OF THE AGREEMENT

The articles of the agreement of August 27, 1930 which are pertinent to this study are the First, Seventh, Tenth and Eleventh. These articles are quoted in full in Exhibit A.

Article Seven does not relate to fluorine compounds and will be discussed later (p. 10).

The First Article defines the products (called "said products") to be manufactured and sold by Kinetic as:

(a) Halogenated hydrocarbons containing at least one Fluorine atom.

(b) Fluorine compounds used or intended to be used in motor fuels.

Article Ten provides that Kinetic should receive an exclusive license under Frigidaire patents relating to the products under

(a) and (b), and including processes not covered by patents.

Article Eleven defines du Pont Company's obligations to Kinetic in the field of "said products".

The Legal Department considers that the application of the First and Eleventh Articles to future situations cannot be predicted with certainty and that these provisions are a potential source of dispute. The following analysis of Article Eleven is an attempt to put a reasonable construction on its language, which admittedly might not be concurred in by General Motors:

1. If development work pertaining to "said products" is done by du Pont at the request and expense of Kinetic, General Motors, or Frigidaire, the results shall be transferred and assigned to Kinetic.
2. If du Pont at any time owns other inventions pertaining to "said products" or their use, du Pont shall grant a royalty-free exclusive license to Kinetic but only in so far as is necessary to permit the latter to manufacture and sell said products, for use in mechanical operations where volatility is a factor, or for use as solvents.
3. Du Pont is under no obligation to grant a free license under its patents for any other uses of "said products" than aforesaid; but if du Pont develops other inventions pertaining to "said products" or their use at its own expense, it is obligated for a reasonable consideration to license Kinetic, at the latter's request, to use such inventions for the manufacture of "said products".

DU PONT INTEREST IN FLUORINE CHEMICALS

At the time Kinetic was formed du Pont Company had not done any work on organic fluorine compounds. In order to carry out the plans for Kinetic a research group was established at Jackson Laboratory to carry on research work for the benefit of Kinetic; and as time

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passed the du Pont Company became more and more interested in organic fluorine research and work has been done both by the Organic Chemicals and the Chemical Departments in that field on the du Pont Company's own initiative. None of the Chemical Department's work has been charged to Kinetic, and so far the results of its work have not appeared to be of direct interest to Kinetic. However, it is quite possible that some development of processes or products may sooner or later be found to be useful to Kinetic, involving mechanical operations where volatility is a factor, in which case the du Pont Company is obligated to give exclusive, royalty-free rights to Kinetic for these uses.

The situation at Jackson Laboratory, however, has raised some difficulties in apportioning the work as between du Pont and Kinetic, the latter's portion being charged to Kinetic and all patents and information resulting belonging to it. One situation has already arisen in which the rights of Kinetic vs. du Pont were in doubt. This question, which related to tetrafluorethylene (TFE), was considered in Development Department Report D-1127 of April 14, 1942, and recommendation was made that some division of the respective fields of Kinetic and du Pont should be established in order to clear up this case and be a guide for the future.

As of January 1, 1943 a plan was adopted of determining in advance which research projects would be charged to Kinetic and which to du Pont. This appears to be working satisfactorily but is open to two objections. The first is the possibility that work done at du Pont's expense, may, in whole or in part, give results which relate to Kinetic's field, to which Kinetic would be entitled without payment. The second is that the President of Kinetic, who is a du Pont employee, and part of whose pay is charged to Kinetic, passes

on this allocation of work and the charges therefor.

At the present time the work on fluorine chemistry done at Jackson Laboratory is divided about 60% du Pont, 40% Kinetic.

While the work done at Jackson Laboratory on du Pont initiative, as well as that of the Chemical Department, has so far not required the granting of unremunerated rights to Kinetic, there are imminent possibilities of such cases (e.g.: - primary heat transfer material').

The position of the President of Kinetic as the judge of the allocation of charges for research work is possibly open to criticism by the minority interest, although no indication of such criticism has been noted.

The situation in respect to future developments, and their commercial use, points to increasing difficulties as between du Pont and Kinetic. For example, in the manufacture of a halogenated hydrocarbon containing fluorine, certain by-products may be formed which should be isolated, identified, and evaluated.

Such a case (referred to above) arose in connection with tetrafluorethylene and the by-products obtained in its production under the Kinetic patent licensed to du Pont (Plunkett). In granting du Pont an exclusive right to operate under its Plunkett patent, Kinetic included rights to use all by-products formed, one of which, identified after the fact, may prove to be of use in Kinetic's field.

In attempting to correct this situation by modifying the original license agreement, which du Pont is willing to do, General Motors appears to be reluctant to accept any modification for fear that it will not be all-inclusive and cover any possible future developments under the Plunkett patent.

It should also be noted that the definition of Kinetic's rights to the results of du Pont research which appeared adequate

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to the initial situation in 1930, is not adequate at the present time; and an adequate definition of the field based on developments which are foreseen or expected would be difficult even in the light of present day experience.

DIVERSIFICATION OF KINETIC

The activities of Kinetic Chemicals have been in refrigeration uses of fluorine compounds, until the advent of the Aerosol method for distributing insecticides from a pressure vessel containing "Freon". No use of fluorine compounds has been made in motor fuel as General Motors thought possible when the Kinetic contract was drawn. Other uses are possible, for example as a substitute for water in boilers.

Sales of "Freon-12" accounted for approximately 81% of Kinetic's total 1944 sales of over \$12,000,000, and sales of "Freon" for Aerocel accounted for approximately 37% or \$4,500,000. At present over half of "Freon-12" sales (by weight) are for Aerosol.

PRESENT PRODUCTION CAPACITY

The present production capacity for "Freon-12" (the major product) at Deepwater is now 3,500,000 lbs. per month. In addition the East Chicago plant has a "Freon-12" capacity for 2,000,000 lbs. per month. The investment at Deepwater was all made by Kinetic, but Kinetic does not own the movable equipment at East Chicago, which was financed by the Defense Plant Corporation, as there was some doubt that a total capacity of 66,000,000 lbs. per year would be utilized after the war. The Defense Plant Corporation has invested about \$1,800,000 in this equipment.

At Deepwater the other "Freons" for more specialized refrigeration uses are manufactured, such as "Freon-22" and "Freon-113".

The hydrofluoric acid for East Chicago is furnished by other manufacturers.

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FUTURE OF THE BUSINESS

Kinetic management anticipates a postwar demand for "Freons" considerably above the prewar use. Immediately following the war it is anticipated that there will be a demand for new household refrigeration units, small air-conditioning units, frozen food units, and the reconversion to "Freon" of those plants which have had to seek other refrigerants during the war. How large this demand may become, and how fast it will grow is problematical; but it appears that 30,000,000 pounds annually of "Freon-12" is a fair assumption.

Use of the other "Freons" for specialized refrigeration problems, such as low temperature cooling, is also expected to become more and more important.

The major doubt about the postwar demand for "Freon-12" is its use in the Aerosol devices. Consumers other than the armed forces have had no experience with this method of controlling insects, and it can only be assumed that its apparent merit will lead the concerns now making Aerosol equipment for the armed forces, and possibly other concerns, to take advantage of what appears to be a large consumer market. If we allow 10,000,000 pounds for that purpose, the total "Freon-12" demand should be of the order of 40,000,000 pounds per year, plus the use of the other specialized "Freons". This indicates a possibility of acquiring the equipment at East Chicago, which plant together with the newest unit at Deepwater could be devoted to "Freon-12", and other facilities at Deepwater at least partly converted to the manufacture of the other "Freons".

These assumptions depend on the continuation of "Freon" as the preferred refrigerant and the preferred medium for use in Aerosol equipment. It is possible some development, either inside or outside of the du Pont Company might seriously affect "Freon's" position; but as far as can now be seen from the years of work in the refrigeration

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field by du Pont and Kinetic, the "Freons" are outstanding in all the necessary characteristics for refrigeration purposes.

Another factor which has promise of future importance to Kinetic is the use of "Freon-22" as the starting material for tetra-fluoroethylene (TFE), the polymer and copolymers of which are of unusual interest to the Plastics Department.

Kinetic may, therefore, be looked upon as a business with excellent possibilities of further expansion, although the present high level of production due to the war should be discounted for a period of at least 5 years after the war.

A factor relating to maintaining a volume of business of the order of 40,000,000 or more pounds per year, is that of the fluorspar supply. This subject, which has been reviewed and on which investigation is still active, cannot be omitted from consideration of Kinetic's future until a conclusion is reached. Supplies of suitable fluorspar may be a limiting factor both in expansion of Kinetic's volume, and in the period over which it can maintain its present volume.

FINANCIAL REVIEW

A brief statement of the financial history of Kinetic follows. Sales, beginning in 1931 of \$726,000, declined in 1932 and 1933, but thereafter maintained a substantial increase up to 1941, when sales were \$5,221,000. 1942 was slightly less due to curtailment of operations by war restrictions. The 1943 sales reflect the increased capacity at Deepwater effective beginning in August; while the 1944 sales reflect the very substantial increases in capacity provided at both Deepwater and East Chicago and were \$12,194,216. The total capacities of both plants did not become available until January, 1945.

The earnings available for dividends since 1930 have amounted to nearly seven and a half million dollars, and dividends to \$6,729,000 (sales, earnings, and dividends by years are shown in Exhibit B).

Net worth of Kinetic is nearly \$5,000,000 (balance sheet of Dec. 31, 1944 shown in Exhibit C). The du Pont Company investment has been \$1,020,000 for 51% of the stock, and \$1,173,000 to Paid-In Surplus, a total of \$2,193,000.

General Motors has invested a total of \$2,107,000.

Kinetic is on an average earning basis for excess profits tax. At present, earnings up to about \$1,155,000 are subject to the 40% tax, and above that figure are subject to the excess profits tax.

BASIS FOR PURCHASE

The minimum value of General Motors' interest in Kinetic is 49% of the net worth, or about \$2,430,000.

On a basis of earnings, if we assume a volume of 40 million pounds of "Freon-12" we may use as an indication the month of November 1944, which together with the other "Freons", hydrofluoric acid, and miscellaneous sales of that month, yielded earnings before Federal Taxes of \$200,000. Conditions may change the earnings in the post-war period, for example, reduction in depreciation charges (some of which are on a 3 to 5-year basis), expiration of royalty, reduction in price, increase in volume of "Freon-114" and "Freon-22", as forecast by Kinetic (see Exhibit D), and this figure is used merely as an illustration. Annual earnings before taxes would then be \$2,400,000. If we assume elimination of the excess profits tax and retention of a 40% income tax, the net earnings would be \$1,400,000.

General Motors would have an equity of 49% in such earnings or about \$700,000 in round figures.

These figures for illustration purposes may be capitalized
at
6 times = \$4,200,000
8 times = \$5,600,000.

Under present laws General Motors would probably have to pay a 25% tax on the difference between \$2,107,000 and the amount received from sale of its 49% interest, unless it has offsetting Capital Losses.

As long as the Excess Profits tax is in effect, General Motors' equity in earnings would be much less, which should be a factor in any negotiations for the purchase of its interest.

In the above illustrative basis of value, it is assumed that ownership of all the stock would not lead to any substantial difference in operative or administrative expense. Whether Kinetic should be maintained as a separate corporation or not, and for how long, could be determined later based on tax, managerial, or other considerations. Should it be deemed advisable to purchase the equipment at East Chicago after the war, this would be an additional investment for du Pont, but can be omitted from consideration here, as conditions at that time must justify such action.

ARTICLE SEVEN OF THE CONTRACT

In Article Seven of the contract General Motors agreed to offer to Kinetic any future chemical developments originating in the laboratories of it or its subsidiaries, on terms to be mutually agreed upon.

This provision was considered of importance at the time it was included in the contract, but at present the Legal Departments of both parties feel very definitely that it is unenforceable, and therefore of no value. Furthermore, General Motors' activities are so much more mechanical than chemical (except possibly relating to fuels) that the probability of such a provision becoming important is lessened.

Should du Pont Company acquire General Motors' interest in Kinetic the agreement of 1930 should then be cancelled, as Kinetic, or du Pont in the event of the elimination of Kinetic as an operating company, would then operate under the licenses already granted to Kinetic by General Motors and its subsidiaries.

ROYALTIES AND MISCELLANEOUS

Kinetic now pays for the Frigidaire licenses a royalty of 5% of the selling price for its exclusive licenses received under the agreement. This is to continue for a period of 17 years from January 1, 1931, and therefore this obligation still has three years of effective life. Royalties due General Motors for 1944 are \$544,997.11.

Kinetic management is of the opinion that complete ownership of Kinetic would not affect the sales position of the products either adversely or favorably.

Kinetic now pays du Pont an annual management fee based on gross sales. The base fee is \$40,000 for sales of \$2,500,000 or less, increased by .4 of 1% of gross sales over \$2,500,000. For 1944 this amounted to \$78,768.87.

Orchem Department estimates this basis covers du Pont Company expenses and overhead attributable to Kinetic operations.

SUMMARY AND CONCLUSIONS

Kinetic has been a successful venture and has considerable future promise for expansion and earnings.

So far the joint ownership has brought about no dissatisfaction of du Pont's management by the representatives of General Motors, nor has the du Pont Company as yet found itself unduly limited in the development of fluorine compounds which have been assumed to be outside of Kinetic's field of activity..

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However, it is possible that a difference of opinion regarding du Pont vs. Kinetic rights in developments by du Pont may arise, especially as the volume of du Pont work and the extent of du Pont interest in fluorine compounds now involves major expenditures. A change in the personnel either of General Motors representatives, or of du Pont employees now directing the affairs of Kinetic, might well lead to serious disagreements. Furthermore, du Pont has endeavored to be over meticulous in the administration of Kinetic affairs, with respect to the not too clearly defined interests of Kinetic in fluorine derivatives for use in fields other than refrigerants. In fact du Pont Company is obligated to favor Kinetic by virtue of its position, not only as the majority stockholder, but also as manager of Kinetic.

The same desire of du Pont to have unrestricted direction of developments in important fields which has led to acquiring minority interests in other jointly owned activities, is just as pertinent in this case.

This report has not attempted to set a figure of the worth to du Pont of the 49% holdings of General Motors in Kinetic, but it is apparent that collateral considerations should be taken into account besides the prospective earnings of Kinetic, and these collateral advantages indicate that a fairly liberal basis would be justified in negotiating for the purchase of General Motors' interest.

Amendments to clarify the du Pont-General Motors agreement might be attempted, but such amendment would not be nearly so satisfactory as 100% ownership of Kinetic by du Pont, so that it appears desirable to secure the Executive Committee's approval to approach General Motors to explore the possibility of acquiring the minority interest.

APPROVED BY:

Henry E. Ford

PREPARED BY:

David W. Jayne

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EXHIBIT A

ARTICLES FROM AGREEMENT BETWEEN DU PONT
AND GENERAL MOTORS OF AUGUST 27, 1930

FIRST: The term "said products" as hereinafter referred to, to be manufactured and/or sold by the New Company, as herein provided, shall be deemed and considered to mean:

- (a) Halogenated Hydrocarbons containing at least one Fluorine atom.
- (b) Fluorine compounds used or intended to be used in motor fuels.

SEVENTH: As soon as the New Company has been organized and the first calls on the subscriptions of the parties hereto to its capital stock have been paid, the New Company shall engage in the manufacture and sale of the "said products," it being understood and agreed that for the time being said New Company shall operate the semi-commercial plant owned by The Frigidaire Corporation at Morain City, Ohio, which operation shall be carried on at the cost and expense of the New Company, and shall be continued for such time as the Board of Directors of the New Company shall determine; it being further agreed that future chemical developments, (other than those relating to "said products") originating in the laboratories of General, or its subsidiaries, shall be offered by General to the New Company on such terms as may be mutually agreed upon, and if after six months the New Company shall elect not to exploit such new chemical developments, then General shall be free to dispose of the same elsewhere..

EIGHTH: General shall cause its subsidiary, The Frigidaire Corporation, promptly upon the execution of this agreement to grant to the New Company an exclusive license (subject to a right to be retained by Frigidaire for the use only of Frigidaire or of any other wholly owned subsidiary of General Motors in refrigeration) to manufacture, use and sell "said products" under all patents or applications for Letters Patent, whether issued or applied for, in the United States and/or foreign countries at the date hereof, or which may hereafter be issued or applied for in said United States and/or foreign countries by General or by the said The Frigidaire Corporation, as well as under all inventions and/or processes on which no applications have been filed; it being understood that the obligation of said The Frigidaire Corporation under this Paragraph shall extend to and include all inventions, processes, patents and applications pertaining to the "said products", in so far as said The Frigidaire Corporation shall have a right to dispose of the same, subject, however, to any rights heretofore granted to the Ethyl Gasoline Corporation under that certain agreement with General dated August 28th, 1924, and particularly to Paragraph 10 thereof attached hereto and marked Exhibit "A"; it being understood that the provisions of Paragraph 10 were interpreted to include compounds for the removal of carbon from engine cylinders and apparatus for applying such compounds; it being further understood and agreed that said

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license shall be substantially in the form attached hereto, made a part hereof and marked Exhibit "E".

ELEVENTH: Du Pont shall transfer and assign to the New Company all patents and/or processes arising out of research and development work pertaining to the "said products" carried on at the request of the New Company, General or The Frigidaire Corporation, and the expenses of such development or research work shall be borne entirely by the New Company, and if DuPont shall now or at any time hereafter own or control any process or patent other than aforesaid, pertaining to the manufacture and use of any of "said products", then DuPont shall without cost or expense to the New Company grant to the New Company an exclusive license to manufacture, use and sell "said products" under any such patent or process for use in mechanical operations where volatility is a factor, or for use as solvents, but nothing contained herein shall require DuPont to grant to the New Company a free license under said new processes or patents for any other uses, provided, however, that if DuPont shall at its own expense develop any such processes for uses other than those aforesaid and the New Company shall then or thereafter desire to use any such patent or process in the manufacture of "said products", then and in that event a license shall be granted with respect to the same which shall be upon a reasonable basis of compensation.

KINETIC CHEMICALS, INC.

SALES AND PROFITS

1930 - 1942

	<u>Product Sales</u>	<u>Profit Before Taxes</u>	<u>Profit After Taxes</u>
Four Months ended Dec. 31, 1930		38,684.80*	38,684.80*
Year ended Dec. 31, 1931	714,119.25	262,284.48	235,452.52
Year ended Dec. 31, 1932	208,800.86	7,075.77*	7,942.29*
Year ended Dec. 31, 1933	402,416.16	32,729.70*	32,729.70*
Year ended Dec. 31, 1934	868,827.58	299,601.34	262,015.01
Year ended Dec. 31, 1935	1,226,153.68	439,407.74	377,762.47
Year ended Dec. 31, 1936	1,828,516.63	837,056.80	696,048.62
Year ended Dec. 31, 1937	2,683,362.02	1,028,013.51	856,411.67
Year ended Dec. 31, 1938	2,131,795.70	644,577.15	534,333.95
Year ended Dec. 31, 1939	2,951,780.58	1,167,820.10	966,313.29
Year ended Dec. 31, 1940	3,459,030.41	1,505,211.84	980,798.34
Year ended Dec. 31, 1941	4,543,264.93	1,891,205.21	921,843.61
Year ended Dec. 31, 1942	4,007,120.02	1,303,967.81	636,471.91

* Figures are in red on original copy.

E. I. du PONT DE NEMOURS & COMPANY

INCORPORATED

WILMINGTON, DELAWARE

EXECUTIVE OFFICES

January 18, 1927.

Mr. John J. Raskob, V. P.
General Motors Corporation,
224 West 57th Street,
New York City, N. Y.

Dear John:

At the Finance Committee meeting yesterday you mentioned the fact that General Motors Corporation laboratories were working on the synthetic rubber problem. On inquiry I find that our Dye Department, who have been working on this same subject, were aware that General Motors were working on it also, but have not attempted any co-operation in their work.

Our Dye Department are working on a single line, based on an idea which came to one of our chemists as to a possible synthesis. We are not making any general investigation of the subject nor trying any steps in any synthetic process, except this one as already mentioned. We understand that the General Motors laboratory is covering the field more generally.

On thinking the matter over, I wonder whether it is a wise expenditure of money on the part of General Motors to go into a synthetic rubber investigation. A great deal of work has been done on this subject by very competent people and well organized research groups. I understand

that the General Motors Chemical Department is neither well organized for this purpose nor is the personnel such as would likely prove successful. The same line of thought has so far kept the du Pont Company from a general investigation of the subject, yet we think the du Pont Company is better equipped for this purpose than General Motors.

Should General Motors be successful in developing a process, it would probably not be desirable for it to go into the manufacture; whereas if du Pont were successful, it is just the kind of manufacturing operation which the Company should be qualified to enter. This is an additional reason why du Pont should work on the problem rather than General Motors.

In view of the above, it seems to me that either General Motors must be making a mistake in working on this problem, or du Pont is making a mistake in not working on it in a broader way. Won't you refer this letter to the party responsible for General Motors having embarked on this investigation, and ask him to let me know the reason which has guided his decision to undertake the work.

Yours very truly,

LduPont

PRESIDENT

LduP/MD

NOTE: "Answered Jan 19 1927 J.J. Raskob" is stamped at top of first page. The name and address of the addressee are crossed out by hand and "Mr. Sloan" is written in the left margin. Italics indicate handwriting.

GENERAL MOTORS CORPORATION

224 WEST 57TH STREET

NEW YORK

January 19, 1927.

Lammot duPont, President,
E.I. duPont de Nemours & Company,
Wilmington, Delaware.

Dear Lammot:

I am referring your letter of the eighteenth to Mr. Sloan for reply.

The rubber situation is one that is very close to the General Motors Corporation and it is tremendously important that the Corporation interest itself in every possible phase of it. I have been in quite close touch with it, representing the motor industry and working with the rubber companies with a view to doing everything we can to protect the American situation and position. Secretary Hoover is coming to New York to have lunch with me at my apartment on Saturday to talk this situation over as I have some very strong convictions as to what should be done, apart from my prosecution of the study of the possibilities of producing rubber synthetically.

I am quite sure that our laboratories feel that they are equipped to do the work they are doing in this connection and the General Motors interest in it is one of understanding the situation with a view to making better moves for protection; whereas the duPont interest ought to be, from the point of view of developing a product which it is doubtless admirably fitted to produce once we learn how.

As above stated, Mr. Sloan will write you at length about this matter.

Sincerely yours,

J. M. Clegg
Chairman.

GENERAL MOTORS CORPORATION

224 WEST 57TH STREET

Mr. Lammot duPont, President
E. I. duPont deNemours & Company,
Wilmington, Delaware.

My dear Lammot:-

John has referred to me your letter of the 18th dealing with the matter of General Motors activities in the synthetic rubber problem, and in view of the fact that I am really responsible for this activity, I will write you regarding the matter; telling you how it came about and all that sort of thing.

Now, you say in your letter that you understand that General Motors Chemical Department is neither well organized nor is its personnel such as would likely prove successful. This statement may be right or it may be wrong. Frankly, I do not know which it is, but I think if I had told you six or seven years ago that General Motors Research was working on some chemical scheme whereby we could inject some quantities of some unknown material into gasoline to enable us to increase the compression and produce a fuel of anti-knock qualities, you would have probably said exactly the same thing and would have thought, as I did as a matter of fact a good many times while we were spending the money, that we were very foolish in mixing up with something that was purely of a chemical or fuel character and had nothing to do with the primary manufacture of motor cars. Then after we had discovered the material and found it of the character it was, you would very likely have questioned the ability of our Research reports to develop methods of making the material itself in a practical way, yet that was accomplished also.

However that may be, we landed with something quite successful which I think in the course of events will result in our making considerable money, but aside from all this, irrespective of what measure anyone may place on the development of tetraethyl lead, this fact is indisputable - that the work that General Motors Research did in connection with fuel, has changed the whole fuel picture to a very material degree, and even if through subsequent research work - and that is not at all unlikely - tetraethyl lead is superseded by something else, a great advance in our knowledge of the relationship between fuel and the explosive engine, will have been accomplished.

Page #2,
Mr. Lamont duPont,
January 21, 1927.

Both Mr. Teagle, President of Standard Oil Company of New Jersey and Colonel Stewart, Chairman of Standard Oil Company of Indiana, have told me that the work that General Motors Research did in connection with the development of anti-knock materials, is the first real constructive work that has ever been done by the industry to adopt the fuel to the engine. Mr. Teagle told me that about all they did up to that time was to dig a hole in the ground and pump out what was below.

Now, I do not say that this same thing will happen in our rubber development, but I mention all this because my experience - perhaps yours is different - indicates that it does not always follow that discoveries along any of these lines come from those sources where they would be most expected.

To get back to the rubber situation, Mr. Midgley, who was responsible for the tetraethyl lead development, with Mr. Kettering, asked me if there would be any objection to the Corporation spending \$40,000 a year in what might be the forlorn hope of solving this very important problem. It seemed to me a very long shot just as tetraethyl lead seemed to me. Many times I was almost on the point of saving the money and not continuing it. In this particular case, Mr. Midgley was so enthusiastic and so was Mr. Kettering, and they both felt that they had some very well defined ideas, that it seemed to me it would be well worth-while spending this comparatively small sum of money and seeing what the boys, so to speak, could accomplish.

In a big organization I believe it is a good thing to do this thing provided the cost is not great and I do not think anybody could accuse General Motors of being reckless in the expenditure of money along these lines. We are doing a business approaching \$5,000,000,000 and our research work does not cost us, fairly considered, over \$375,000 and a good deal of this is really not research work - it is practical engineering that is properly a part of the cost of sales.

The boys have been working on this for a year and I reviewed the thing recently with Mr. Midgley and Mr. Kettering, having in mind the desirability of including the same amount in our 1927 budget. Frankly, I know very little about chemistry and have very little appreciation of what they are trying to do or what progress they may have made. I must, therefore, rely upon Mr. Midgley and Mr. Kettering. They felt that sufficient progress had been made to justify continuing for another year. Now, if we continue for another year, we will have spent perhaps \$80,000. I recognize that it is a long chance and perhaps we are foolish in doing it, but as John has written you, it is a problem very close to us in very many ways and in view of your letter and recommendation, when

Page #3.
Mr. Lamont duPont,
January 21, 1927.

the budget comes before the Executive Committee I will bring this matter specifically to their attention and if they feel that we ought to cut it out, it is perfectly satisfactory to me. I really do not care much one way or the other. I simply have gone on with it-on speculation, feeling that, as I said before, sometimes we get something like this when we least expect it.

The only point I really do want to make is-- that I do not think it is exactly fair to say that we are doing this with a personnel that in itself would lead to the belief that nothing could be accomplished.

There is another point I see you bring up and that is - if we are successful, there certainly would be plenty of time to consider what we should or should not do with the result. In the development of tetraethyl lead we did not go into the manufacture of it - the duPont Company did it. If we should be so fortunate as to make some contribution in the development of synthetic rubber, we would have made an important contribution to industry in general; to the automotive end of it in particular, and in view of our large proportion of the automotive industry, to ourselves directly and indirectly.

Very truly yours,

Alfred P. Sloan, Jr.

APSJr. K

NOTE: A short, vertical hand-drawn line appears to the left of each of: the third line in the second paragraph of page one, the third line in the second paragraph of page three, and the eighth line in the third paragraph of page three.

Letterhead of
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
EXECUTIVE OFFICES

January 25, 1927

Mr. Alfred P. Sloan, President,
General Motors Corporation,
New York City, N. Y.

Dear Alfred:

I certainly appreciate your letter of January 21st and the trouble you have taken to give me a clear understanding of the situation and the details which have led to the decision for General Motors laboratory to look into synthetic rubber.

I did not intend to reflect in any way upon the General Motors Chemical Department. I have never looked into that Department myself, and my opinion of its character and ability has been obtained entirely from General Motors men; such as yourself and John. I had always understood that it was not the Company's intention to maintain a complete Chemical Department, especially in the organic chemical branch, to which synthetic rubber seems to belong. The information I get on the subject of synthetic rubber convinces me that the working out of this problem is one to tax the facilities of the most complete laboratory.

It is true that discoveries do not always come from the sources to be expected, but again, judging from what I have heard of synthetic rubber and the work

that has been done, its development, is not going to be a discovery, but more likely a painstaking search for the right method (probably already known) for doing each of several steps required.

I am not belittling at all the work of General Motors employes on Anti-Knock Compound, but was not this study essentially a study of what takes place in a gasoline engine; and an automobile laboratory would be the natural place to depend on for results.

True, synthetic rubber is of great importance to General Motors, but so is steel, copper and many other raw materials, but on this ground I would not advocate General Motors laboratory delving into all the ramifications of such production.

Do not let me trouble you any further on this point. I am not trying to force upon you my views or opinions. If I have put into your mind the thought that possibly synthetic rubber is not a suitable subject of investigation by the General Motors Chemical Department, then I am perfectly willing to accept your decision.

Yours very truly,

L du Pont

PRESIDENT

LduP/MD

NOTE: A check mark appears above "21st" in the second line of the body of the letter. Italics indicate handwriting. Illegible pencil mark is written in the upper right corner.

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February 3, 1927.

Mr. Lammot duPont, President,
E. I. duPont deNemours & Company,
Wilmington, Delaware.

My dear Lammot:-

In going over your letter of January 25th I fear greatly you got the impression from my letter of January 21st that I was answering a suggestion in the way of an argument, which I did not intend to do. As a matter of fact, I dictated my letter immediately on receipt of the memorandum I received from John and in the meantime I went to Detroit and the letter was sent out in my absence. In going over it I noticed one mistake which may or may not have been corrected on the original. I stated we were doing business approaching \$5,000,000,000. Manifestly, that is wrong. It should be \$1,000,000,000. It was simply a typographical error.

I think you are right. There is a difference perhaps between a fuel development and a rubber development - the latter not being as closely associated with that part of the product with which we are directly concerned. As a matter of fact, however, the single item by all odds that we purchase from outside sources and the one that has been most unsatisfactory from the standpoint of erratic costs out of line with the real economics of the case, is the rubber tire and that perhaps in itself might justify us giving the general subject some thought.

There is another point that I did not mention and which has some bearing on the case and that is this:- I have found when any of our people are desirous of tackling an unusual job, that provided the expense is not great, we usually learn something of value either on the subject or in some other way and it is good in many ways, from a psychological standpoint. I know of many instances where certain of our people become greatly interested in a certain idea, the value of which perhaps they over-estimate; if they are prevented from developing those ideas, in a way, it has a reactionary influence. On the contrary, if they are encouraged, even if it results in some cost to the Corporation, it has a beneficial influence on the entire picture.

Mr. Midgley worked many years, under most adverse circumstances and in the most enthusiastic way, in the development of tetra ethyl lead. I felt, in view of his contribution to the Corporation's development, that it was no more than fair, when he

Page #2,
Mr. Lammot duPont,
February 3, 1927.

became tremendously interested in the problem under discussion, to at least spend a little money to see what he could make out of it - not with the hopes that anything really could be accomplished, but because in a way, dealing with big things, he was entitled on account of his previous record, to a reasonable amount of consideration. Do you not think there is something to this side of it?

As I said before, if nothing tangible develops during the current year, I shall feel fully warranted in feeling that he has been given his chance and that, considering we are not directly concerned even if we are greatly indirectly concerned, we might better transfer his efforts to some other direction.

Very truly yours,

APSJr./K

NOTE: Stamp in right margin of first page contains the initials, "A.P.S.", "J.L.P.", "H.M.C.", "F.C.H.", "A.K.H.", "L.R.B.", "A.T.B." and "W.F.A.", to the right of each of "A.P.S." and "A.T.B." is a check mark.

February 3, 1927.

Mr. J. Brooks Jackson,
General Motors Corporation,
Detroit, Michigan.

My dear Brooks:-

Dealing with your letter of January 31st, would state that I can't help but agree with you, and have felt right along - in fact, did when this project was started - that there was little likelihood of it getting us anywhere in a practical way, but of course I appreciate that that is only an impression and there are no facts upon which to base such a viewpoint.

Mr. Lammot duPont has recently been corresponding with me and he feels it is absolutely wrong for us to attempt a thing of this kind. I have written him that I think he is probably right, but have urged upon him the thought that six or nine years ago if we had told him that we had certain ideas on 'dope' so to speak, for fuels, he probably would have said exactly the same thing and questioned the ability of our organization to work it out because, naturally, we are not in the chemical business. What I mean by this is - that it frequently happens that wonderful things come from unexpected sources and develop out of the most discouraging and almost hopeless activities.

Aside from the merits of the case, I have felt about it something like this:- Messrs. Kettering and Midgley did a wonderful piece of work in the development of fuels - the first real work that has ever been done, so I have been told by disinterested oil people of importance. It was certainly a great achievement and irrespective of the commercial success that follows the tetra ethyl lead discovery, a great contribution will have been made toward better co-ordination between the engine and the fuel. We can afford to do these things because we are such an important part of the picture.

That being as it is, I felt, in view of Midgley's contribution, supported by Mr. Kettering, that he was entitled to a reasonable amount of consideration and accordingly authorized the expenditure of a relatively small sum of money on what seemed to me, from my more practical viewpoint, a hopeless job. I am also satisfied, irrespective of the technical merits of the case, concerning which I know nothing, to go ahead through 1928, at the end

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Page #2,
Mr. J. Brooks Jackson,
February 3, 1927.

which time we will have perhaps made a total expenditure of something like \$80,000. If at that time there are no very definite developments which indicate a more hopeful outcome, I shall certainly feel that Midgeley has had his chance, and irrespective of the argument that will, of course, be advanced at that time, that further work will bring the result, in view of our more or less secondary interest in the proposition, I will be inclined to recommend that we discontinue.

Very truly yours,

APSJr./K

NOTE: Two check marks to the right of the third paragraph on the first page appear in a routing stamp containing almost completely obliterated initials.

2840



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
EXECUTIVE OFFICES

February 21, 1927.

Mr. Alfred Sloan, President,
General Motors Corporation,
224 West 57th Street,
New York City, N. Y.

Dear Alfred:

Thanks for yours of February 3d in regard to General Motors experimental work, especially in connection with synthetic rubber, which letter I found waiting for me on my return from Palm Beach. I understand we passed you going down, as we came up on Sunday, the 13th..

Hope you enjoy yourself as much as we did.

I appreciate fully what you say as to the desirability of allowing good minds, who are extremely interested in important investigations, have a little more than the normal amount of rope. We do it also and I believe it tends to keep up the enthusiasm and interest of all concerned.

Yours sincerely,

John D. Rockefeller Jr.
PRESIDENT

LduP/MD

NOTE: Stamp at upper right reads: "RECEIVED FEB 23 1927 A.P. SLOAN".
Stamp at lower right contains initials, "A.P.S.", "J.L.P.", "H.M.C.",
"F.C.H.", "A.K.H.", "L.R.B.", "A.T.B." and "W.F.A." with a check mark to
right of each of "A.P.S." and "A.T.B."

5123

E. I. DU PONT de NEMOURS & COMPANY
(INCORPORATED)
DEVELOPMENT DEPARTMENT

July 13, 1931

Copy to Mr. Lammot du Pont, President
Mr. W. S. Carpenter, Jr. V.P.

FOREIGN RELATIONS COMMITTEE (3)
BUILDING

ACCELERATORS FOR DIESEL MOTOR FUEL

Through this Department's monthly reports to the Executive Committee you are familiar with the suggestion made by I.C.I. that we should take an interest in the manufacture of accelerators such as ethyl nitrate for Diesel motor fuel. While we have not as yet obtained any proposition from I.C.I., and only meagre information, we have been giving quite some attention to the subject and have also been in communication with the General Motors Corporation who have tested some samples for us. The Explosives Department has also taking an interest in the matter and are working on several chemicals which might be used instead of ethyl nitrate.

Inasmuch as we are not equipped to test Diesel motor fuel and felt that our work should be entirely with the General Motors Corporation, we have endeavored to cooperate with that company through Mr. J. L. Pratt. In the course of ex-

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(DP)
GMC-551

change of letters, we have received a letter of July 3rd from Mr. Pratt which it is felt should be brought to your Committee's attention inasmuch as it has a bearing on the du Pont - I.C.I. relationship.

It is requested that your Committee advise us in regard to the proper attitude to take with respect to both I.C.I. and General Motors Corporation.

Fin Sparre (Stamp)
Director

Note. At top left is written note "Ex Com Advise Pratt no
objig to I.C.I. or IG". Also "Pratt 7/16" in writing and
stamp "Received Jul 14 1931 Lammot du Pont." In lower
right corner appears gmc-551 in writing.

5125

COPY

GENERAL MOTORS CORPORATION
Broadway at 57th St.
New York

July 8, 1931

Mr. David W. Jayne
Development Department
E. I. du Pont de Nemours & Co.
Wilmington, Del.

Dear Mr. Jayne:

I have your letter of July 1st in reference to cooperative arrangement between duPont and General Motors, in working out the possibilities of Diesel motor fuel accelerators.

With the present contractual arrangements that I understand in a general way the du Pont Company has with English and German chemical manufacturers, to the effect that the German and English have certain rights in any chemical developments made by the du Pont Company, make it impracticable in my judgment to work out a cooperative arrangement such as you have in mind, as such an arrangement would probably require you to give any developments to your English and German associates, in which case it would be difficult to recognize any rights of General Motors Corporation.

While we are very glad to test any specific chemical that the du Pont Company may have reason to think will improve Diesel fuel oil, we do not think from General Motors' standpoint we could put all of the background of General Motors fuel research into a cooperative arrangement with the du Pont Company for the chemical knowledge that the du Pont organization might bring to such a cooperation. Our experience in development of ethyl gasoline and Kinetic chemicals indicated that we have some chemical knowledge and experience in our organization that enables us to arrive at a fairly satisfactory chemical solution of our problems when once the fundamentals are understood.

Therefore, I do not believe we could agree to work with the du Pont Company in a cooperative way on this problem, except on specific chemicals you might submit to us.

4 605

Very truly yours,

(s) J. L. PRATT
Vice-President

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Government's Exhibit No. 897

E. I. DU PONT DE NEMOURS & COMPANY
(INCORPORATED)
WILMINGTON, DELAWARE
FOREIGN RELATIONS DEPARTMENT

5126

July 15, 1931.

FROM: FOREIGN RELATIONS COMMITTEE

With reference to your letter of July 13th, addressed to the Foreign Relations Committee on Accelerators for Diesel motor fuel, the Foreign Relations Committee discussed this subject Tuesday morning. The Committee came to the conclusion that the stand taken by Mr. Pratt in his letter of July 3rd, to Mr. Jayne, is perfectly justified and that, therefore, our cooperation with General Motors should be confined to the testing of such specific chemicals as we may submit to them. We would request that in writing Mr. Pratt that you point out that contrary to his understanding we have no contractual obligations with any German Companies which might interfere with a joint research program.

Incidentally, Mr. Lammet duPont has requested that no reply be made to Mr. Pratt until he has discussed the matter with the Executive Committee.

J. K. JENNEY, SECRETARY

jkj/ems.

5127

Wilmington, Delaware; July 16, 1931.

Mr. John Pratt, Vice-President,
General Motors Corporation,
Broadway at 57th Street,
New York City; New York.

Dear John:

I have seen your letter of July 3rd to Mr. Jayne of our Development Department, in which you give reasons why General Motors should not join du Pont in the working out of possibilities of Diesel Motor fuel accelerators.

I am writing you this letter unofficially, because there is considerable difference of opinion among the members of our Executive Committee as to exactly what the situation is, but want to point out to you immediately some errors you have fallen into, and to point out that your conclusion is wrong, because the premises are either incorrect or at some future time will be made incorrect.

First, let me say, that we have no connections with the German chemical manufacturers similar to those with I.C.I. You probably have in mind the explosives patent and process agreement with the Germans which is no longer in existence.

Second. If our obligations to I.C.I. are such that joining forces with General Motors places upon Geenral. Motors some obligation without their consent, results flowing from the du Pont - I.C.I. agreement will, in this respect, be intolerable, and that agreement will have to be changed.

2843

Third. I have the highest regard for the work which the General Motors Chemical Department has done in various fields, but wish to point out that General Motors has had no experience in the development of chemical manufacturing processes and the operation of plants to carry out such processes, and, as far as I know, there is no reason to believe that any such latent ability exists within the General Motors Corporation organization; therefore, General Motors would be very foolish to refuse an association with an experienced chemical manufacturer because of the success they have had in the development of Ethyl Gasoline and Kinetic Chemicals.

As one interested in the welfare of both du Pont and General Motors, and having some knowledge of the policies and aspirations of both, it would seem to me a calamity if, in any case, either company failed to make an effort to use and gain the advantage of the experience of the other in their particular fields. It seems to me certain that this sort of co-operation will result in a gain to both corporations, and, of course, must be so conducted as to result in a loss to neither to the others advantage.

Yours very truly,

LduP/MD. CHAIRMAN OF THE BOARD

NOTE. "File Copy" is stamped across face each page of document.

5129

GENERAL MOTORS CORPORATION

Broadway at 57th Street

New York, N. Y.

July 20, 1931

Mr. Lammot duPont;
Chairman of the Board,
General Motors Corporation,
Wilmington, Delaware.

Dear Mr. duPont:

Please accept my thanks for your letter of July 16th, in regard to correspondence I have had with Mr. Jayne, of your Development Department, relative to cooperation between the duPont Company and General Motors in the development of fuel accelerators.

I am very glad to be set straight on the relationship of the duPont Company with the German chemical manufacturers. Also, I am glad to know that whenever your obligations to the I.C.I. conflict with you joining forces with General Motors, on chemical developments, the agreement will have to be changed.

I agree fully with practically all you have said in the third paragraph of your letter, in regard to lack of experience of General Motors in the development of chemical manufacturing processes and the operation of plant to carry out same. This was fully recognized when we entered into the

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(DP)
(Kinetic)

agreement, under date of August 27th, 1930, with the du Pont Company for the formation of Kinetic Chemicals, Incorporated. Clause 7 of that agreement reads as follows:

"* * * * it being further agreed that future chemical developments (other than those relating to 'said products') originating in the laboratories of General, or its subsidiaries, shall be offered by General to the New Company on such terms as may be mutually agreed upon, and if after six months the New Company shall elect not to exploit such new chemical developments then General shall be free to dispose of the same elsewhere."

This clause was placed in the Kinetic agreement because we wanted to remove from some of our organization the temptation of attempting to build up within General Motors an independent chemical manufacturing activity, and to place any developments along chemical lines in an organization in which we have confidence from the standpoint of their ability to carry on chemical manufacturing processes. Therefore, it was not the manufacturing ability of the duPont Company that I failed to recognize in my letter of July 3rd to Mr. Jayne, in declining to enter into a broader cooperation between the two companies on the motor fuel development, but a desire on my part to avoid complicating, possibly to the disadvantage of General Motors, a development which we have been carrying on for a great many years very intensively in our own laboratories, and a situation which has already been complicated by our agreement with

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GMC-548 a
(DP)
(Kinetic)

the Ethyl Gasoline Corporation, involving as it does the Standard Oil Company. Under our agreement with Ethyl Gasoline Corporation we have to give Ethyl Gasoline Corporation a license under any developments on fuels that involve anti-knock compounds. While the proposed Diesel fuel accelerator would be the opposite from anti-knock compounds, the whole fuel problem is tied up so intimately in our laboratories that it would be difficult to say just what rights would be duPont's and what rights would be General Motors' if in this stage of the development we should undertake a cooperative development with the duPont Company, because it is very possible that in our experiments on Diesel fuel accelerators we may find something that should go in the anti-knock group that we are under contract to turn over to Ethyl Gasoline Corporation, while on the other hand in our anti-knock experiments, which are still being carried on, we may find something that is of value to the Diesel fuel accelerator group.

I do not know whether you realize that we have a background on fuel research that goes back to about 1913. Soon after Mr. Kettering brought out the battery ignition the motor car companies began to blame all of their ignition troubles on battery ignition. This research was started to analyze the problem and determine what factors could properly be blamed on ignition and what on fuel and carburetion. Out of this development came Ethyl gasoline, from the fuel standpoint, and a very promising development on carburetion, which we call our Gem-Cold - a new system of carbur-

etion that we have been working on very intensively for ten years, and which will materially improve the efficiency of an engine if we can ever get it entirely practical. At this late date for General Motors to enter into a partnership with the idea that through such a partnership we would have talent for development of manufacturing processes (which we already think we have through our Kinetic Chemicals agreement) in my judgment would be a mistake and would always open up for argument the determination of the relative amount that the two organizations had contributed to the new development. In this position we are leaving the door wide open for the duPont organization to suggest any chemicals they think will help solve any of these fuel problems, and I am sure our organization will be very glad to cooperate by making any tests that the duPont organization might desire, but to take your organization into our confidence on everything that we are doing alone the lines of fuel research (which I think would be necessary if cooperation with you along the lines suggested were to be effective) would be requiring us to place into the hands of your organization knowledge which we do not believe at this stage of our development we would be justified in doing, from a General Motors Corporation standpoint.

The fact that our developments of Ethyl gasoline and Kinetic chemicals have been made principally by mechanical engineers rather than chemists might be an additional argument why in the early stages of our development it may be best not to have too much chemical experience, as quite

often one does not discover a thing or new methods because they know where others have attempted and failed, and therefore do not try at least once more - the time which may be the successful attempt.

To summarize, as far as I am concerned I hope to see General Motors Corporation utilize to the fullest extent the chemical experience of the duPont Company in manufacturing any chemical compounds that General Motors laboratories may discover, where there is a possibility of commercialization. On the other hand, I do not think it is wise for our research laboratories to join in a development with the duPont Company in the early stages of the development before the problem is well defined and it is known just what part each company can contribute. This is especially true in the General Motors fuel research problem. What I am anxious not to do is - to create a situation that will involve General Motors and the duPont Company in misunderstandings. As I may be entirely wrong in this position I would be very glad to discuss this matter with you any time at your convenience.

Sometime when you are in Detroit it might be desirable for you to spend a little time in our research laboratories and get the picture of just what we are doing along this problem of fuel research.

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Please pardon the length of this letter.

Very truly yours,

/S/ J. L. Pratt

JLP:V

copy to Messrs. Sloan
Kettering

Note. At top of page 1 of this letter appear
2 Lammot du Pont "Received" stamps,
1 dated Jul 21 1931 the other Jul 24 1931.
gmc - 548a appears in lower right corner.

Copy: Mr. E. G. Robinson.

July 31, 1931.

Mr. John L. Pratt, V. P.,
General Motors Corporation,
New York City, N. Y.

Dear John:

I have your very interesting letter of July 20th and thank you for writing so fully. It seems we see this matter in about the same light, which, to me, is very gratifying.

The only additional thought I would like to express is the hope that we all do not get so impressed with our responsibilities under co-operative agreements that we get nothing done or nothing developed. I would rather experience a terrific battle over the rights to a good idea than have nothing developed with perfect peace.

PRESIDENT.

LduP/MD

2854

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MEMORANDUM

To Mr. E. G. Robinson

From L. du Pont, President.

REMARKS:

Please note the attached for your information. John Pratt's letter is in reply to my letter criticising his stand in not wishing to join forces with du Pont in the development of Diesel motor fuel accelerators.

Please return letter.

July 21, 1931.

Note. In lower right corner appears gmc - 548
in writing.

5137

Copy to -

Mr. C. A. Woodbury

Dr. C. L. Burdick

Dr. W. E. Lawson.

August 26, 1931.

TO: F. SPARRE, DIRECTOR
FROM: D. W. JAYNE,

DIESEL FUEL ACCELERATORS

I had a conference on this subject in Mr. Boyd's office in General Motors Research Building, Detroit, at which were present Messrs. O. E. Hunt, V. P.; C. F. Kettering, V. P., Mr. Boyd of the Fuel Section and his assistant (Mr. Lowell?). Mr. J. L. Pratt, V. P. from New York joined us later.

We first discussed our relation with I. C. I. and what it involved, following which Mr. Hunt stated that General Motors also had a similar obligation to the Ethyl Gasoline Corporation. While their obligation does not relate to Diesel fuel yet the evidence so far indicates that the work on anti knock gasoline is related to the Diesel fuel problem and has shown that the exact opposite rating should be given to fuels for these two purposes - that is, a badly knocking fuel in the auto engine is a good fuel in Diesels and vice versa. Therefore such evidence as might be secured in examining Diesel fuels would be pertinent information for Ethyl Gasoline Corporation.

2856

This situation merely emphasized the necessity, at least for the present, of independent work as we had already concluded was necessary. It also disposed of the idea Mr. Pratt had, that the field could be divided between us to prevent duplication. However, I am satisfied that any real examination of Diesel fuels by General Motors is as yet in the future. This was made evident by their next statement that they are not in fact able at present to make engine tests for us on fuel treated with various accelerators because the experimental unit which they have set up in their laboratories is now being equipped to experiment on design which means the fuel must be one of the unvaried factors. The tests they have already made for us appear to be the only fuel tests they have made and immediately afterward they removed the instrumentation used and are now attaching other types of instruments to enable a study of design improvement. (Boyd later showed me the engine on which work was then being done).

General Motors' apparent secondary interest in the matter of Diesel fuel accelerators was then frankly explained by Mr. Pratt who stated he judged we were being misled into thinking the improvement in Diesel engine design and the fuel had any prospect of supplanting the gasoline engine for use in trucks, busses or airplanes. The proposed use in trucks and busses had been assumed to be possible because of the cheapening of the cost of fuel. On that point they all agreed that the cost of gasoline was not more than 1/2¢ higher than Diesel oil and had no prospect of having a greater differential in favor of Diesel oil; that in fact Die-

sel oil except for very large slow speed units was a distillate oil and that the relative yield from crude oil is-

.Gasoline 47%

Fuel Oil 8%

Furthermore any large increase in demand for fuel oil for Diesel engines or by the further use in oil burners for heating purposes, would be likely to place it at a higher price than gasoline. They further stated that they are convinced that the weight of even a prospective improved Diesel engine will be so much greater than the gasoline engine that the greater efficiency per gallon of fuel is entirely offset by transporting the greater weight. Mr. Kettering further stated that they now knew what they had previously believed, that the carburetion of volatile fuel could be and would be very much improved in the near future permitting gasoline engines to continue to lead Diesels on every count except the one point of fire risk.

They then stated that in two uses the fire risk is a major factor - airplanes and boats. For airplanes they expressed a firm belief that Diesels would never succeed, that except the planes built for demonstration purposes, no Diesels were used and the Packard Company had made its Diesel airplane engine publicity for stock market purposes only. Mr. Kettering was now convinced that the solution of the airplane problem was an entirely different or "substitute" fuel for gasoline and intimated they now had such a fuel. He did not seem inclined to tell me about this new airplane fuel and I did not attempt to press him for any definite information. From their point of view, however, they have eliminated Diesels as an airplane possibility.

This left as the only outlets for the future development of Diesel engines, boats and power plant installations. With respect to boats they were convinced that the Diesel was the only solution and believed it had great possibilities. It is true that the large ocean going Diesel engine ships have slow speed engines and use crude oil - selling for 2¢ against 6¢ for distillate fuel oil. The same is also true of larger stationary power plant units. They had some question whether an accelerator would show worth while advantages in such engines especially as the cost of the "doped" fuel would necessarily mean a small amount of a relatively cheap accelerator chemical.

It is a fact that General Motors because of its ownership of Winton Eng. Co. have a belief in the future of Diesels burning fuel oil and of relatively high speed for all except the larger ships, and this confidence is evidenced in the present research program on the development of such engines.

Following the expression of all the above opinions, I took the extreme view that it seems unprofitable for the du Pont Co. to spend any money on the problem of accelerators for Diesel fuel. This brought some reactions and I am inclined to think that they may not be so sure of their conclusions as they first indicated. In the first place they believe the potentialities for boat use are relatively large, and should it be found possible to noticeably improve crude oil by an accelerator at a low cost per gallon of fuel used it might extend to all classes of boats and to stationary power plants, and I sensed that after all they would be somewhat disappointed if we did not go on with our work, but their presentation of

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the possibilities would indicate careful consideration on our part before extending our present initial program and expending any material sums of money on the project.

The conversation referred to above also gave a very clear idea of the fact that General Motors has really done nothing on the subject of these accelerators beyond the tests they made for us and some general consideration they have given the subject. Furthermore, they have no immediate intention of working on that problem as they stated there is no provision for such work in this year's research budget.

Mr. Hunt then stated what had by then seemed evident, that they had no engine on which to make tests for us. He assured me that this subject would be studied by them sooner or later, and at that time they would undoubtedly set up another test engine. He offered in the meantime to furnish us such an engine with the instruments necessary and teach us the technique of the tests. He thought this might cost \$20,000. We agreed, however, that to follow out that suggestion seemed a useless duplication of expenditure as they were so sure that "later on" they would provide themselves with such a unit of their own. It was left that Mr. Hunt would give the subject further consideration and write us an optional offer, covering:

First - A charge to be made us for these tests, provided we could wait till they installed their test engine, with some idea when that might be, and

Second - A charge to be made us in the event we authorized them to set up their test engine within the next two months.

He was quite indefinite as to the difference there might be in these two offers, except that it meant anticipating expenditures on next year's budget, the interest on which could not be important, and the possible necessity of training two more men to handle Diesel engine tests. In any event he assured me it was their desire to do anything possible to co-operate with us and admitted that the information they secured in those tests would probably be of direct value to them later.

I suggested that in view of their not being in position to make these tests now, we might go to other Diesel engine builders to have these tests made. They flatly stated that no one else had the experience in testing engine fuels in the way that was necessary and no one else had the design of the instruments necessary to record the necessary results especially for a quantitative answer. Whether this is true or not, I feel that it indicated a desire to have us work with them and not to let the other people follow any developments we may make.

I told them of our intention to make preliminary tests on possible accelerators to judge of the qualitative comparison of such various chemicals and to eliminate from the necessity of making engine tests those which were not promising. I asked them what standard we should set on the fuel oil we would use in order to avoid a variable. Mr. Boyd stated that two oils might exactly meet any usual oil specification and yet be quite unlike in their burning properties at a given pressure and temperature. That any oil might even change its character in this respect by standing and if we bought

5143

five barrels in order to have a uniform supply, by the time we came to use the last barrel it might be quite different from its original condition. He also pointed out that it would be desirable to work with the worst possible oil insofar as its action in Diesel engines is concerned, but he knew of no way to specify such an oil and go about securing it as the oil companies know nothing of this subject. He stated that he had considered using xylene when they came to work on this problem. This suggestion is based on the fact that it is one of the best anti-knock hydrocarbons and therefore should be one of the worst for Diesels, that it is relatively cheap, can be secured very uniform and in quantity. At least he recommended that we try it out in our test device as it should give comparative values in the same apparatus.

CONCLUSION

In view of the opinion of General Motors as today disclosed, we should schedule for laboratory manufacture and preliminary test, a relatively few compounds, representing primarily types of various possible compounds rather than different products in the same class. This work will in any event not be started before Sept. 1st and by then we should hear from Mr. Hunt and know what expenditure may be necessary to have engine tests made. Immediately after receiving General Motor's offer, the scope of the work planned should be surveyed so that our expenditures may be kept within the appropriation and so that we may not anticipate by too long an interval, the time when products passed by our preliminary tests can be tested on an engine.

2062

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DWJ. M.

D. W. JAYNE (stamp)
DEVELOPMENT DEPARTMENT

NOTE. "F. Sparre & D. W. Jayne" at top of page 1 are crossed out in pencil and there is a pencil check-mark before Dr. C. L. Burdick at top of page 1.

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E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
DEVELOPMENT DEPARTMENT

March 11, 1946

Mr. Lammot du Pont

Room 9046

du Pont Building

Dear Uncle Mots:

Just before you left you spoke to me about the possibility of public repercussions to my dual position on the boards of General Motors and U. S. Rubber. As you suggested, I discussed the matter with Mr. McCoy and he can see absolutely no objection. He felt that any public reaction that might be was not of the type that need or should be taken seriously. In fact, he felt that my position as an employe of the du Pont Company serving on the board of its customer, despite the fact of du Pont's stock interest in General Motors, was much more questionable from the ethical angle than my serving on U. S. Rubber, which is not a customer of importance to du Pont. So summing it all up, he could see no need for me to change my present status.

In order to get the opinion of another, I wrote Mr. John W. Davis who, as a fellow director on the U. S. Rubber board and Chief Counsel of the company, was the proper person for me to consult and, who at the same time having been politically active, has a pretty good sense of public opinion and reactions. Mr. Davis concurs with Mr. McCoy—that he sees no reason why I should not serve on both boards and points out cases where quite a number of U. S.

2864

5116

Rubber directors, including himself, sit on the boards of banks with which U. S. Rubber actively deals. He cannot see the difference between that customer relationship and the General Motors situation.

In the face of the above, I think I will ride along a bit further although I think your suggestion of Colgate is very good and should be studies further. When Uncle Bus gets back in April would you like to talk to him about it?

Sincerely,

Mots Copeland

LduPC:K

NOTE: "U.S. Rubber" is written in upper right corner;
"RECEIVED MAR 12 1946 LAMMOT DU PONT" is stamped at top of page. Italics indicate handwriting.

2

2865

January 31, 1930.

Mr. F. B. Davis, President,
United States Rubber Co.,
New York City, N. Y.

Dear Dave:

I saw Mr. A. B. Purvis, President of Canadian Industries, Ltd., yesterday. He showed me correspondence with Mr. R. S. McLaughlin in regard to General Motors of Canada purchases of automobile tires.

It appears that General Motors of Canada tire business is done largely with Goodyear, but that recently a portion of their business has gone to Dunlop of Canada, which I understand is controlled by Dunlop of England, but in which Canadian Industries, Ltd. has a considerable stockholding. It is alleged that the Dominion Rubber Company, a subsidiary of United States Rubber Company has been after some of the General Motors of Canada tire business, using the argument that the du Pont Company, who are heavily interested in General Motors, are also heavily interested in United States Rubber Company. Mr. McLaughlin has been set straight in this matter, being advised that the du Pont Company has no interest whatever in U. S. Rubber, but that certain individuals connected with the du Pont Company have personal interests, which, however, are far less in extent than Mr. McLaughlin had supposed.

Now, it is, of course, all right for United States Rubber Company to "go after" the General Motors of

Canada business through the Dominion Rubber Company, but I do not believe it is either fair or proper, under the circumstances, to use as an argument the interests of the U. S. Rubber stockholders or their connection with General Motors. Could you not get the business on the basis of quality, services and price?

I have told Mr. Purvis that as far as I am personally concerned, and I think I represent the feelings of the other individuals here, that I cannot subscribe to the idea of using our interests in both General Motors and United States Rubber as a means of getting business. If you go into this matter at any time, I am sure you are perfectly warranted in talking frankly and freely with either Mr. Purvis or Mr. McLaughlin. They both understand the situation thoroughly and I am sure look upon things in the same way that I do.

Yours sincerely,

LduP/MD

NOTE: "105" is written in upper right corner of first page.

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**RELATIVE SIZE OF DU PONT, GENERAL MOTORS,
AND U. S. RUBBER IN THEIR RESPECTIVE FIELDS**

Year 1950

DU PONT IN CHEMICAL FIELD

<u>Company</u>	<u>Net Sales (Round Numbers)</u>
Du Pont	\$1,297,000,000
Union Carbide & Carbon	758,000,000
Allied	408,000,000
Amer. Cyanamid	322,000,000

Source: Annual Reports to Stockholders

GENERAL MOTORS IN AUTOMOTIVE FIELD

<u>Company</u>	<u>Total Units Produced in U. S.* (Round Numbers)</u>
General Motors	3,656,000
Ford	1,902,000
Chrysler	1,328,000
All Others	1,133,000

*Passenger Cars and Trucks

Source: Wards Automotive Yearbook

U. S. RUBBER IN TIRE & RUBBER FIELD

<u>Company</u>	<u>Net Sales (Round Numbers)</u>
Goodyear	\$845,000,000
U. S. Rubber	696,000,000
Firestone	691,000,000
Goodrich	543,000,000

Source: Annual Reports to Stockholders

2638



RELATIVE SIZE OF DUPONT, GENERAL MOTORS AND U. S. RUBBER IN THEIR RESPECTIVE FIELDS

Year 1950

DUPONT IN CHEMICAL FIELD

NET SALES
(1000 OMITTED)

\$1,500,000

1,250,000

1,000,000

750,000

500,000

250,000

DU PONT
UNION
CARBIDE
AND CARBON

GENERAL MOTORS IN AUTOMOTIVE FIELD

**TOTAL UNITS
PRODUCED ***

4,000,000

3,000,000

2,000,000

1,000,000

GENERAL
MOTORS FORD CHRYSLER ALL
OTHERS

U. S. RUBBER IN TIRE AND RUBBER FIELD

NET SALES
(1000 OMITTED)

\$1,000,000

750,000

500,000

250,000

GOODYEAR U. S.
RUBBER FIRESTONE GOODRICH



* Passenger Cars and Trucks
Produced in U.S.

2869

* Not a member of the Du Pont Family as described in paragraph 7 of the Amended Complaint.

EXHIBIT C

Date of Convoy	No. of Shares	Person for whose benefit convoy was made	Last known address	Family Relation	Person or agency, if any thru whom connection, if any, was made
DELAWARE REALTY & INVESTMENT CORP.					

12/4/26	125	Natalie W. du Pont	255 Goodard Ave., Brookline, Mass.	Daughter Trust (A)	Willington Trust Co., Trustee
"	125	Esther D. du Pont	Barley Mill Road, Wilmington, Del.	Son	(A)
"	125	Lammot du Pont, Jr.	Montchanin, Del.	Daughter	(A)
"	125	Pierre S. du Pont III	Rockland, Del.	Son	(A)
"	125	Alexandrine de M. du Pont	Greenville, Del.	Daughter	(A)
"	125	Edith du Pont III	Westmoreland, Willington, Del.	Son	(A)
"	125	Reymolds du Pont	3213 Swarthmore Road, Montchanin, Del.	Daughter	(A)
"	125	"	3213 Swarthmore Road, Montchanin, Del.	Son	(A)
"	125	"	3213 Swarthmore Road, Montchanin, Del.	Daughter	(A)
3/24/15	417	(B) Key employees	Gift Nephew-in-Law Sale "Randalea", Greenville, Del.	Cousin Deceased	Willington Trust Co., Trustee
1/5/26	100	*A. Félix du Pont	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Reymolds du Pont
12/24/34	600	J. Simpson Dean	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Edith du P. Riebel
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Esther du P. Weir
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Lammot du Pont, Jr.
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	David F. du Pont
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Mary du P. Faulkner

CHRISTIANA SECURITIES CO. COMMON STOCK

3/24/15	417	(B) Key employees	Gift Nephew-in-Law Sale "Randalea", Greenville, Del.	Cousin Deceased	Willington Trust Co., Trustee
1/5/26	100	*A. Félix du Pont	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Reymolds du Pont
12/24/34	600	J. Simpson Dean	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Edith du P. Riebel
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Esther du P. Weir
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Lammot du Pont, Jr.
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	David F. du Pont
"	600	"	3001 Penna. Ave., Wilmington, Del.	Montchanin, Del.	Mary du P. Faulkner

EXHIBIT C, P. I

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Subparagraphs (a), (b), (c), (d). The data called for by these subparagraphs is set forth in Exhibit D, annexed hereto and made a part hereof.

Interrogatory No. 4

Subparagraphs (a), (b), (c), (d). The data called for by these subparagraphs is set forth in Exhibit C, annexed hereto and made a part hereof.

Interrogatory No. 3

PLAINTIFF'S INTERROGATORIES NOS. 3 AND 4
ANSWER OF DEFENDANT TO

Government's Exhibit No. 1211

2874

"5,300 shares of Christiansen Securities Company preferred stock,
of Christiansen Securities Company common stock," should read,
on page 2, Item (c) should be revised as follows: "5,300 shares

C O R R E C T I O N

5135

Government's Exhibit No. 1210-A

- (A) In March of 1915 six stockholders of du Pont Securities Co. contributed a total of 11,750 shares of its stock to a pool from which grants of the stock were made to key employees of the du Pont Company. Pierre S. du Pont contributed 5,875 shares of stock to the pool and received no shares upon the distribution. R. R. M. Carpenter contributed 705 shares and received 1,250 shares.
- (B) In December, 1919, Pierre S. du Pont sold to each of the members of the Executive Committee of E. I. du Pont de Nemours (which included Lamont du Pont, A. Felix du Pont, and F. D. Brown) 1,000 shares of the company's common stock at a price based on the asset value of the stock. Each purchase was financed by a loan from the du Pont Company to the Executive Committee. The object of the transaction was to reward the good work done for the du Pont Company by the members of the Executive Committee. The purchaser of the company's common stock, which were estimated to have a value equal to the difference between the sale price and the then market price of each 1000-share lot, remained permanently with the company. By April, 1921, the market price of each of the purchases had fallen below the price at which Mr. du Pont had sold the shares in question. On April 8, 1921, Mr. du Pont turned over to each of the purchasers 400 shares of Christiansia Securities Company common stock, which were estimated to have a value equal to the difference between the sale price and the then market price of each 1000-share lot.
- (C) On December 28, 1922, Mr. du Pont transferred to Mrs. du Pont 1000 shares of General Motors Corporation debenture and 5,300 shares of Christiansia Securities Company common stock, together with 2,757 shares of du Pont Company debenture; and Mrs. du Pont transferred to him 8,050 shares of U. S. Steel Corporation common stock.
- (D) On April 30, 1924, Pierre S. du Pont conveyed 12,000 shares of General Motors Corporation common stock in trust, the income from the shares to be payable to H. R. Sharp during his life and, upon his death, the principal to revert to Mr. du Pont. On August 9, 1928, Mr. du Pont modified the terms of the trust to remove all reverisinary interest in himself and to give Mr. Sharp power to dispose of the stock upon his death.

Date of Convoy-	No. of Shares	Person for whose benefit convoy- ance was made	Convoye-	Last known address	Nature of consideration-	Family relation-	Conveyance ship	Conveyance made any, through whom con- veyance was made	Person or agency, if any, through whom con- veyance was made
CHRISTIANA SECURITIES CO. (COMMON)									
CHRISTIANA SECURITIES CO. (PREFERRED)									
5/8/15	500	H. R. Sharp	Wilmingtton, Delaware	"	Cousin	Brother	"	"	"
5/8/15	500	W. W. Laird	Chas. Copeland Powder Co.	"	"	Cousin	"	222.75	"
5/8/15	500	*Eugene E. du Pont	Wilmingtton, Delaware	"	"	Cousin	"	222.75	"
5/8/15	500	*Henry F. du Pont	Wilmingtton, Delaware	"	"	Cousin	"	222.75	"
4/8/21	400	Lamont du Pont	Wilmingtton, Delaware	"	3d Cousin, once removed, by marriage)	(B)	"	"	"
4/8/21	400	*Felix du Pont	Wilmingtton, Delaware	"	3d Cousin, once removed, by marriage)	(B)	"	"	"
4/8/21	400	*Ethel Hunt	Wilmingtton, Delaware	"	3d Cousin	Brother	"	"	"
9/1/28	10	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"	Gift	Wife	"	"	"
12/19/22	5,300(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"	Gift	Wife	"	"	"
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"	Gift	Wife	"	"	"
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"	Gift	Brother-in-law	"	"	"
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"	Trust(D)	"	"	"	"
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"	Trust	Wife	Exchange	"	"
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"	Truck & Coach Bus	Newburgh, N.Y.	Gift	64 Shrs. Yellow Cousin	"
3/31/20	500	(deceased)	"	"	Exhibit C, P. I.				
3/16/28	64	Jeanne du P. Bush	"	"					
GENERAL MOTORS CORP. (DEBENTURE)									
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"	GENERAL MOTORS CORP. (COMMON)				
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19	27	W. W. Laird	Wilmingtton, Delaware	"					
4/30/24	12,000	H. R. Sharp	Wilmingtton, Delaware	"					
12/28/22	1,000(C)	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/27/20	2,293	Mrs. Alice B. du Pont	Wilmingtton, Delaware	"					
10/30/19</td									

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is set forth in Exhibit D, annexed hereto and made a part hereof.
Subparagraphs (a), (b). The data called for by these subparagraphs is set forth in Exhibit C, annexed hereto and made a part hereof.

Interrogatory No. 4

is set forth in Exhibit C, annexed hereto and made a part hereof.
Subparagraphs (a), (b), (c), (d). The data called for by these subparagraphs

Interrogatory No. 3

ANSWER OF PLAINTIFFS, IN PART TO PLAINTIFF'S INTERROGATORIES
Nos. 3 and 4

5152

Government's Exhibit No. 1210

The number of shares which were held
in the name of another (whether
completely, trustee or otherwise), stated
as each such holder of such stock as
holder for you.

(a) The number of shares you held in your own name on each of
such dates;

4. State the following with reference to your stockholdings,
direct and indirect, on January 1, 1949 and October 1, 1951, in
each of the following companies: Del Norte Realty & Investment
Corporation, Citizens Securities Company, United States Rubber
Company, General Motors Corporation, and E. I. du Pont de Nemours
and Company, separately the holdings of common and preferred

(P) **Wholly-owned companies**, shares may be issued in such companies which were included in the conveyance.

The name and last address and family relationships
to you of each other person to whom you have made each
such conveyance, and if you made the conveyance inadvertently
to such person (as to a trustee or holding company), or
otherwisewise, state the name of each person or agency
through whom the conveyance was thus made for the benefit
of the members of the firm.

(a) **Keep conversations you need**, either directly or indirectly, of any of such stock to a member of the Pioneers' Club through the establishment of a trust, or otherwise;

3. State, with references to the capital stock of Christians
Boutiques Company, Delavan Realty & Investment Corporation, United
States Rubber Company, and General Motors Corporation, during
any of the period from July 30 October 15, 1951, you held or in
what you had a beneficial interest through trustee agreements, personal
holding companies, or otherwise:

IMPROVEMENTS NO. 3 AND 4 PROPOSED BY PLANTER TO PICTURE 5. DU PORT, ILLUMINE DU PORT, AND LAMBERT DU PORT

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
CHRISTIANA SECURITIES CO. COMMON STOCK (Cont'd)							
12/24/34	600	Natalie du P. Edmonds	Wilmington, Del.	Daughter	Trust	-	Wilmington Trust Co. Trustee
"	600	Pierre S. du Pont, 3d	Rockland, Del.	Son	"	-	"
"	600	Alexandrine du P. Perkins	3213 Swarthmore Road, Westmoreland, Wilmington, Del.	Daughter	"	-	"
"	1,600	David F. du Pont	Wilmington, Del.	Son	"	-	"
"	1,600	Willis H. du Pont	Wilmington, Del.	Son	"	-	"
9/25/37	100	Alexandrine du P. Perkins	3213 Swarthmore Road, Westmoreland, Wilmington, Del.	Daughter	Gift	-	-
10/10/42	100	* Howard A. Perkins Katharine L. du Pont	Déceased Greenville, Del.	Son-in-law Daughter-in-law	"	-	-
12/15/44	100	Reynolds du Pont Geo. P. Edmonds, Jr.	Greenville, Del. Du Pont Road, Westover Hills, Wil., Del.	Son Grandson	"	-	-
"	1	Andrew W. Edmonds	Du Pont Road, Westover Hills, Wil., Del.	"	"	-	-
"	1	Herbert K. Faulkner, II	255 Goddard Ave., Brookline, Mass.	"	"	-	-
"	1	Elise Faulkner	255 Goddard Ave., Brookline, Mass.	Granddaughter	"	-	-
"	1	Emily M. Faulkner	255 Goddard Ave., Brookline, Mass.	"	"	-	-
"	1	Charles Faulkner	255 Goddard Ave., Brookline, Mass.	Grandson	"	-	-
"	1	Rosemary Faulkner	255 Goddard Ave., Brookline, Mass.	Granddaughter	"	-	-
"	1	Henry B. Faulkner	255 Goddard Ave., Brookline, Mass.	Grandson	"	-	-

Exhibit C, p. 2

* Not a member of the Du Pont Family as described in paragraph 7 of the Amended Complaint.

22627

<u>Date of Conveyance</u>	<u>No. of Shares</u>	<u>Person for whose benefit conveyance was made</u>	<u>Last known address</u>	<u>Family Relationship</u>	<u>Nature of Conveyance</u>	<u>Consideration, if any</u>	<u>Person or agency, if any, thru whom conveyance was made</u>
CHRISTIANA SECURITIES CO. COMMON STOCK (Cont'd)							
12/15/44	1	Andrew G. Faulkner	255 Goddard Ave., Brookline, Mass.	Grandson	Gift	-	-
"	1	Lammot du Pont 3d	Barley Mill Road, Greenville, Del.	"	"	-	-
"	1	William F. du Pont	Barley Mill Road, Greenville, Del.	"	"	-	-
"	1	Pierre S. du Pont IV	Rockland, Del.	"	"	-	-
"	1	Jane de D. du Pont	Rockland, Del.	Granddaughter	"	-	-
"	1	Michele W. du Pont	Rockland, Del.	"	"	-	-
"	1	Edith du P. Riegel	Montchanin, Del.	"	"	-	-
"	1	Richard E. Riegel, Jr.	Montchanin, Del.	Grandson	"	-	-
"	1	John E. Riegel	Montchanin, Del.	"	"	-	-
"	1	Natalie M. Riegel	Montchanin, Del.	Granddaughter	"	-	-
"	1	Katharine L. du Pont (Same as 19 Grand- children listed 12/15/44 of 1 share each)	Greenville, Del.	"	"	-	-
12/10/45	19	Ditto—with addition of: Reynolds du Pont, Jr.	Greenville, Del.	Grandson	"	-	-
12/12/46	20	Ditto—12/12/46	Greenville, Del.	Grandson	"	-	-
12/15/48	21	Ditto—12/12/46 with addition of: Thomas L. du Pont	Greenville, Del.	Grandson	"	-	-
CHRISTIANA SECURITIES CO. PREFERRED STOCK							
12/5/33	3,000	Margaret F. du Pont	Wilmington, Del.	Wife	"	-	-
UNITED STATES RUBBER CO. COMM							
12/22/38	100	Geo. P. Edmonds, Jr.	Wilmington, Del.	Grandson	"	-	-
"	100	Andrew W. Edmonds	Wilmington, Del.	"	"	-	-
"	100	Herbert K. Faulkner, II	255 Goddard Ave., Brookline, Mass.	"	"	-	-

Exhibit C, p. 3

5159

2878

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
UNITED STATES RUBBER CO: COMMON (Cont'd)							
12/22/38	100	Elise Faulkner	255 Goddard Ave., Brookline, Mass.	Granddaughter	Gift	—	—
"	100	Emily M. Faulkner	255 Goddard Ave., Brookline, Mass.	"	"	—	—
"	100	Charles Faulkner	255 Goddard Ave., Brookline, Mass.	Grandson	"	—	—
"	100	Rosemary Faulkner	255 Goddard Ave., Brookline, Mass.	Granddaughter	"	—	—
"	100	Lammot du Pont III	Barley Mill Road, Greenville, Del.	Grandson	"	—	—
"	100	Pierre S. du Pont, IV	Rockland, Del.	"	"	—	—
"	100	Edith du P. Riegel	Montchanin, Del.	Granddaughter	"	—	—
"	100	Richard E. Riegel, Jr.	Montchanin, Del.	Grandson	"	—	—
"	100	John E. Riegel	Montchanin, Del.	"	"	—	—
12/15/39	1,200	(Same as 12 Grandchildren listed 12/22/38, with addition of: Wm. F. du Pont)	Barley Mill Road, Greenville, Del.	"	"	—	—
"	100	Jane de D. du Pont	Rockland, Del.	Granddaughter	"	—	—
7/18/41	8,000	Natalie du Pont Edmonds	Du Pont Road, Westover Hills, Wil., Del.	Daughter	Trust	—	Wilmington Trust Co. Trustee
"	8,000	Mary du P. Faulkner	255 Goddard Ave., Brookline, Mass.	"	"	—	"
"	8,000	Pierre S. du Pont, III	Rockland, Del.	Son	"	—	"
"	8,000	Lammot du Pont, Jr.	Barley Mill Road, Greenville, Del.	"	"	—	"
"	8,000	Edith du Pont Riegel	Montchanin, Del.	Daughter	"	—	"
"	8,000	Alexandrine du P. Perkins	3213 Swarthmore Road, Westmoreland, Wilmington, Del.	"	"	—	"

Exhibit C, p. 4

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
UNITED STATES RUBBER CO. COMMON (Cont'd)							
7/18/41	8,000	Esther du Pont Weir	Wilmington, Del.	Daughter	Trust	—	Wilmington Trust Co., Trustee
"	8,000	Reynolds du Pont	Greenville, Del.	Son	"	—	"
"	8,000	David F. du Pont	Wilmington, Del.	"	"	—	"
"	8,000	Willis H. du Pont	Wilmington, Del.	"	"	—	"
UNITED STATES RUBBER CO. PREFERRED							
12/31/32	3,000	Irenee du Pont	Granogue	Brother	Sale	\$24,375	—
12/15/37	100	Geo. P. Edmonds, Jr.	Du Pont Road, Westover Hills, Wil., Del.	Grandson	Gift	—	—
"	100	Andrew W. Edmonds	Du Pont Road, Westover Hills, Wil., Del.	"	"	—	—
"	100	Herbert K. Faulkner, II	255 Goddard Ave., Brookline, Mass.	"	"	—	—
"	100	Elise Faulkner	255 Goddard Ave., Brookline, Mass.	Granddaughter	"	—	—
"	100	Emily M. Faulkner	255 Goddard Ave., Brookline, Mass.	"	"	—	—
"	100	Charles Faulkner	255 Goddard Ave., Brookline, Mass.	Grandson	"	—	—
"	100	Lammot du Pont, III	Barley Mill Road, Greenville, Del.	"	"	—	—
"	100	Pierre S. du Pont, IV	Rockland, Del.	Granddaughter	"	—	—
"	100	Edith du P. Riegel	Montchanin, Del.	Grandson	"	—	—
"	100	Richard E. Riegel, Jr.	Montchanin, Del.	Daughter	Trust	—	Wilmington Trust Co., Trustee
7/18/41	1,000	Natalie du Pont Edmonds	Du Pont Road, Westover Hills, Wil., Del.	"	"	—	"
"	1,000	Mary du P. Faulkner	255 Goddard Ave., Brookline, Mass.	Son	"	—	"
"	1,000	Lammot du Pont, Jr.	Barley Mill Road, Greenville, Del.	"	"	—	"
"	1,000	Pierre S. du Pont, III	Rockland, Del.	Daughter	"	—	"
"	1,000	Edith du Pont Riegel	Montchanin, Del.				

Exhibit C, p. 5

2880

5161

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
UNITED STATES RUBBER CO. PREFERRED (Cont'd)							
7/18/41	1,000	Alexandrine du P. Perkins	3213 Swarthmore Road, Westmoreland, Wil., Del.	Daughter	Trust	"	Wilmington Trust Co., Trustee
"	1,000	Esther du Pont Weir	Wilmington, Del.	"	"	"	"
"	1,000	Reynolds du Pont	Greenville, Del.	Son	"	"	"
"	1,000	David F. du Pont	Wilmington, Del.	"	"	"	"
"	1,000	Willis H. du Pont	Wilmington, Del.	"	"	"	"
GENERAL MOTORS CORP. COMMON STOCK							
9/15/30	2,000	* Carolene Hynson du Pont Miller	"Hinchingham", Chestertown, Md.	Former Wife	Gift	"	"
GENERAL MOTORS CORP. PREFERRED STOCK							
None ever held							
GENERAL MOTORS CORP. DEBENTURE STOCK							
No conveyance applies							

- NOTES: (A) In accordance with the terms of the trust instrument, the trust expired on March 25, 1943 and the beneficiary became full owner of the stock.
- (B) In March of 1915 six stockholders of du Pont Securities Co. contributed a total of 11,750 shares of its stock to a pool from which grants of the stock were made to key employees of the du Pont Company. On March 24, 1915, as part of the transaction, Lammot du Pont contributed 1,880 shares of the stock and received 1,250 shares. R. R. M. Carpenter contributed 705 shares and received 1,250 shares.

Exhibit C, p. 6

E

* Not a member of the Du Pont Family as described in paragraph 7 of the Amended Complaint.

2881

ANSWER OF DEFENDANT IRENEE DU PONT TO
PLAINTIFF'S INTERROGATORIES NOS. 3 AND 4

5163

Interrogatory No. 3

Subparagraphs (a), (b), (c), (d). The data called for by these subparagraphs is set forth in Exhibit C, annexed hereto and made a part hereof.

Interrogatory No. 4

Subparagraphs (a), (b). The data called for by these subparagraphs is set forth in Exhibit D, annexed hereto and made a part hereof.



Answer of Irene du Pont to Interrogatory No. 3

5164

Government's Exhibit No. 1212-A

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
DELAWARE REALTY & INVESTMENT CO.							
6/ 4/24	100	I. Sophie du Pont May	Granogue, Del.	Daughter	In Trust (A)		Irenee du Pont, Trustee
"	100	Margareta L. Greenewalt	Greenville, Del.	"	" (A)		"
"	100	Constance S. du Pont Darden	Charlottesville, Va.	"	" (A)		"
"	100	Eleanor F. du Pont Rust	R. F. D. No. 5 Thomasville, Ga.	"	" (A)		"
"	100	Doris E. du Pont	Deceased	"	" (A)		"
"	100	Mariana du Pont Silliman	Montchanin, Del.	"	" (A)		"
"	100	Octavia M. du Pont Bredin	Greenville, Del.	"	" (A)		"
"	100	Lucille E. du Pont Flint	" "	"	" (A)		"
"	200	Irenee du Pont, Jr.	3500 Linden Ave., Parkersburg, W. Va.	Son	" (A)		"
CHRISTIANA SECURITIES CO. COMMON							
3/ 2/15	(A)						
3/19/15	417	★ A. Felix du Pont, Sr.					
12/16/24	250	★ Emile du Pont	Deceased	Cousin Nephew	Gift		
			2203 Grant Ave., Wil-				
			mington, Del.				
2/14/25	1000	Ernest N. May	Granogue, Del.	Son-in-law			
1/ 4/26	100	J. Simpson Dean	Montchanin, Del.	Husband of niece	Sale	\$30,000.00	
1/15/26	10	R. R. M. Carpenter, Sr.	Deceased	Brother- in-law		5,560.00	
6/30/26	1000	Crawford H. Greenewalt	Greenville, Del.	Son-in-law	Gift		
12/31/26	1000	Constance S. du Pont Darden	Charlottesville, Va.	Daughter	In Trust (B)		Lammot du Pont, Sr., Trustee
"	1000	Eleanor F. du Pont Rust	R. F. D. No. 5, Thomasville, Ga.	"	" (B)		"

Exhibit C, p. 1

* Not a member of the DuPont Family as described in paragraph 7 of the Amended Complaint.

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
CHRISTIANA SECURITIES CO. COMMON (Cont'd)							
12/31/26	1000	Doris E. du Pont	Deceased	Daughter	In Trust (B)		Lammot du Pont, Sr., Trustee
"	1000	Mariana du Pont Silliman	Montchanin, Del.	"	" (B)		"
"	1000	Octavia M. du Pont Bredin	Greenville, Del.	"	" (B)		"
"	1000	Lucille E. du Pont Flint	" "	"	" (B)		"
"	1000	Irenee du Pont, Jr.	3500 Linden Ave., Parkersburg, W. Va.	Son	" (B)		"
7/ 5/33	100	*E. Paul du Pont, Jr.	1021 Kent Rd., Wilmington, Del.	Nephew	Gift		E. Paul du Pont, Sr., Trustee
"	100	*Alexis Irene du Pont	Montchanin, Del.	"	In Trust (C)		"
"	100	*Jacques Turgot du Pont	" "	"	" (C)		"
"	100	*Stephen du Pont	R.F.D. No. 4, Westport, Conn.	"	" (C)		"
"	100	*Benjamin Bonneau du Pont	141 Somerset Ave., Fairfield, Conn.	"	" (C)		"
"	100	*Francis George du Pont	831 Hillside Rd., Fairfield, Conn.	"	" (C)		"
12/16/40	50	Mrs. Irene du Pont	Granogue, Del.	Wife	Sale (D)	\$130,000	"
"	50	Constance S. du Pont Darden	Charlottesville, Va.	Daughter	" (D)	"	
"	50	Eleanor F. du Pont Rust	R.F.D. No. 5, Thomasville, Ga.	"	" (D)	"	
"	50	Margareta L. Greenewalt	Greenville, Del.	"	" (D)	"	
"	50	L. Sophie du Pont May	Granogue, Del.	"	" (D)	"	
"	50	Lucille E. du Pont Flint	Greenville, Del.	"	" (D)	"	
"	50	Mariana du Pont Silliman	Montchanin, Del.	"	" (D)	"	
"	50	Octavia M. du Pont Bredin	Greenville, Del.	"	" (D)	"	
"	50	Irenee du Pont, Jr.	3500 Linden Ave., Parkersburg, W. Va.	Son	" (D)	"	

Exhibit C. p. 2

* Not a member of the Du Pont Family as described in paragraph 7 of the Amended Complaint.

<u>Date of Conveyance</u>	<u>No. of Shares</u>	<u>Person for whose benefit conveyance was made</u>	<u>Last known address</u>	<u>Family Relationship</u>	<u>Nature of Conveyance</u>	<u>Consideration, if any</u>	<u>Person or agency, if any, thru whom conveyance was made</u>
CHRISTIANA SECURITIES CO. PREFERRED							
10/16/23	312½	I. Sophie du Pont May	Granogue, Del.	Daughter	Sale	\$25,579.69	Fidelity Phila. Trust Co. (Wilmington Trust Co. Successor Trustee)
"	312½	Margareta L. Greenewalt	Greenville, Del.	"	"	25,579.69	"
"	312½	Constance S. du Pont Darden	Charlottesville, Va.	"	"	25,579.69	"
"	312½	Eleanor F. du Pont Rust	R.F.D. No. 5, Thomasville, Ga.	"	"	25,579.69	"
"	312½	Doris E. du Pont	Deceased	"	"	25,579.69	"
"	312½	Mariana du Pont Silliman	Montchanin, Del.	"	"	25,579.69	"
"	312½	Octavia M. du Pont Bredin	Greenville, Del.	"	"	25,579.69	"
"	312½	Lucille E. du Pont Flint	" "	"	"	25,579.68	"
2/14/25	1000	I. Sophie du Pont May	Granogue, Del.	"	"	25,579.68	"
5/13/25	200	*Alice du Pont Buck	"Buena Vista", Wilmington, Del.	Cousin	Gift Sale	18,000.00	
5/13/25	150	*Katherine Clark du Pont(*)	South Londonderry, Vt.	Wife of cousin	"	13,500.00	
"	50	*Frank V. du Pont	2400 W. 11th St., Wilmington, Del.	Cousin	"	4,500.00	
2/17/26	1000	Margareta L. Greenewalt	Greenville, Del.	Daughter	Gift		
12/31/26	295¾	I. Sophie du Pont May	Granogue, Del.		In Trust		
"	295¾	Margareta L. Greenewalt	Greenville, Del.				
"	295¾	Constance S. du Pont Darden	Charlottesville, Va.				
"	295¾	Eleanor F. du Pont Rust	R.F.D. No. 5, Thomasville, Ga.				
"	295¾	Doris E. du Pont	Deceased				

(*) Present name — Katherine Clark Ketcham.

2885

5166

Exhibit C, p. 3

* Not a member of the Du Pont Family as described in paragraph 7 of the Amended Complaint.

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
CHRISTIANA SECURITIES CO: PREFERRED (Cont'd)							
12/31/26	295 1/4	Mariana du Pont Silliman	Montchanin, Del.	Daughter	In Trust		Fidelity Phila. Trust Co. (Wilmington Trust Co. Succeeding Trustee).
"	295 1/4	Octavia M. du Pont Bredin	Greenville, Del.	"	"		
"	295 1/4	Lucille E. du Pont Flint	" "	"	"		
12/31/26	1000	Constance S. du Pont Darden	Charlottesville, Va.	"	"	(E)	Lammot du Pont, Sr., Trustee
12/31/26	1000	Eleanor F. du Pont Rust	R.F.D. No. 5, Thomasville, Ga.	"	"	(E)	"
"	1000	Doris E. du Pont	Deceased	"	"	(E)	"
"	1000	Mariana du Pont Silliman	Montchanin, Del.	"	"	(E)	"
"	1000	Octavia M. du Pont Bredin	Greenville, Del.	"	"	(E)	"
"	1000	Lucille E. du Pont Flint	" "	"	"	(E)	"
"	1000	Irenee du Pont, Jr.	3500 Linden Ave.; Parkersburg, Va.	Son	"	(E)	"
6/26/50	100	*Alexis Felix du Pont IV	1021 Kent Rd., Wilmington, Del.	Great nephew	"		E. Paul du Pont, Jr., Trustee
"	100	*E. Paul du Pont III	"	"	"		"

UNITED STATES RUBBER CO. COMMON

10/29/31	8250.48(F)	Mrs. Irene du Pont	Granogue, Del.	Wife	Sale	\$72,832.87	
12/30/32	5905.86(G)	I. Sophie du Pont May	" "	Daughter	(G)		Wilmington Trust Co., Trustee
"	5905.86(G)	Margareta L. Greenewalt	Greenville, Del.	"	(G)		"
"	5905.86(G)	Constance du Pont Darden	Charlottesville, Va.	"	(G)		"
"	5905.86(G)	Eleanor du Pont Rust	R.F.D. 5, Thomasville, Ga.	"	(G)		"
"	5905.86(G)	Mariana du Pont Silliman	Montchanin, Del.	"	(G)		"
"	5905.86(G)	Octavia du Pont Bredin	Greenville, Del.	"	(G)		"
"	5905.86(G)	Lucille du Pont Flint	" "	"	(G)		"
"	5905.86(G)	Irenee du Pont, Jr.	3500 Linden Ave.; Parkersburg, W. Va.	Son	(G)		"
12/31/32	4594.76(H)	Lammot du Pont	Wilmington, Del.	Brother	Sale	\$24,373.18	

Exhibit C, p. 4

* Not a member of the Du Pont Family as described in paragraph 7 of the Amended Complaint.

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
UNITED STATES RUBBER CO. PREFERRED							
1/11/29	800	Mariana du Pont Silliman	Montchanin, Del.	Daughter	Sale	\$57,000.00	Wilmington Trust Co., Trustee
"	800	Lucille du Pont Flint	Greenville, Del.	"	"	57,000.00	"
"	800	Octavia M. du Pont Bredin	"	"	"	57,000.00	"
"	800	Doris E. du Pont	Deceased	"	"	57,000.00	"
"	800	Irenee du Pont, Jr.	3500 Linden Ave., Parkersburg, W. Va.	Son	"	57,000.00	"
12/31/32	673.11(K)	Lammot du Pont	Wilmington, Del.	Brother	—	—	
10/29/31	1208.65(I)	Mrs. Irenee du Pont	Granogue, Del.	Wife	Sale	72,832.87	
12/31/31	5441	Mrs. Irenee du Pont	"	"	"	41,487.00	
12/24/34	100	Irenee du Pont May	"	Grandson	Gift	—	
"	100	Ernest N. May, Jr.	"	"	"	—	
"	100	Thomas Henry May	Greenville, Del.	Granddaughter	"	—	
"	100	David Greenewalt	"	Grandson	"	—	
"	100	Nancy Greenewalt Frederick	Montchanin, Del.	"	"	—	
"	100	Henry H. Silliman, Jr.	Charlottesville, Va.	"	"	—	
"	100	Colgate W. Darden, III	"	"	"	—	
"	100	Pierre du Pont Darden	R. F. D. No. 5, Thomasville, Ga.	"	"	—	
"	100	Philip G. Rust, Jr.	"	"	"	—	
12/ 9/37	100	F. G. du Pont Rust	Granogue, Del.	Wife	—	—	
12/27/37	52	Mrs. Irenee du Pont	Montchanin, Del.	Son-in-law	Gift	—	
"	100	Henry H. Silliman	R. F. D. No. 5, Thomasville, Ga.	"	"	—	
"	100	Philip G. Rust	Charlottesville, Va.	"	"	—	
"	100	Colgate W. Darden, Jr.	Greenville, Del.	"	"	—	
"	100	Crawford H. Greenewalt	Granogue, Del.	"	"	—	
"	100	Ernest N. May	"	Daughter	In Trust	—	
12/30/32	865.14(J)	I. Sophie du Pont May	Greenville, Del.	"	"	—	
12/30/32	865.14(J)	Margareta L. Greenewalt	Charlottesville, Va.	"	"	—	
"	865.14(J)	Constance S. du Pont Darden	R. F. D. No. 5, Thomasville, Ga.	"	"	—	
"	865.14(J)	Eleanor F. du Pont Rust	Montchanin, Del.	"	"	—	
"	865.14(J)	Mariana du Pont Silliman	Greenville, Del.	"	"	—	
"	865.14(J)	Octavia M. du Pont Bredin	"	"	"	—	
"	865.16(J)	Lucille E. du Pont Flint	3500 Linden Ave., Parkersburg, W. Va.	Son	"	—	
"	865 (J)	Irenee du Pont, Jr.					

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
UNITED STATES RUBBER CO. PREFERRED (cont'd)							
12/15/38	50	Doris du Pont Silliman	Montchanin, Del.	Granddaughter	Gift	None	
"	50	Henry Rust	R. F. D. No. 5, Thomasville, Ga.	Grandson	"	"	
"	50	Irene Sophie Darden	Charlottesville, Va.	Granddaughter	"	"	
"	50	Crawford H. Greenewalt, Jr.	Greenville, Del.	Grandson	"	"	
1/ 5/39	50	Doris du Pont Silliman	Montchanin, Del.	Granddaughter	"	"	
"	50	Irene Sophie Darden	Charlottesville, Va.	Granddaughter	"	"	
"	50	Henry Rust	R. F. D. No. 5, Thomasville, Ga.	Grandson	"	"	
5/27/40	50	Irene Sophie Darden	Charlottesville, Va.	Granddaughter	"	"	
"	50	Henry Rust	R. F. D. No. 5, Thomasville, Ga.	Grandson	"	"	
"	50	Crawford H. Greenewalt, Jr.	Greenville, Del.	Granddaughter	"	"	
"	50	Doris du Pont Silliman	Montchanin, Del.	Grandson	"	"	
"	100	John Eric May	Granogue, Del.	Granddaughter	"	"	
10/ 5/40	50	Robert B. Flint, Jr.	Greenville, Del.	Grandson	"	"	
"	50	Richard C. Rust	R. F. D. No. 5, Thomasville, Ga.	Granddaughter	"	"	
5/15/41	100	Robert B. Flint, Jr.	Greenville, Del.	Grandson	"	"	
"	100	Richard C. Rust	R. F. D. No. 5, Thomasville, Ga.	Granddaughter	"	"	
"	200	Eleanor H. Silliman	Montchanin, Del.	Grandson	"	"	
12/29/42	100	Mariana Silliman	"	Granddaughter	"	"	
"	100	Peter Flint	Greenville, Del.	Grandson	"	"	
9/22/43	100	Peter Flint	"	Granddaughter	"	"	
"	100	Mariana Silliman	Montchanin, Del.	Grandson	"	"	
5/10/46	300	Alice Lucille Flint	Greenville, Del.	Granddaughter	"	"	
"	300	Irene du Pont	3500 Linden Ave., Parkersburg, W. Va.	Grandson	"	"	
11/28/47	100	Stephanie Bredin	Greenville, Del.	Grandson	"	"	
"	100	Henry Alexis Flint	"	Grandson	"	"	

Date of Conveyance	No. of Shares	Person for whose benefit conveyance was made	Last known address	Family Relationship	Nature of Conveyance	Consideration, if any	Person or agency, if any, thru whom conveyance was made
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UNITED STATES RUBBER CO. PREFERRED (cont'd)

11/28/47	100	Robert Morris Silliman	Montchanin, Del.	Grandson	Gift	
5/10/48	200	Stephanie Bredin	Greenville, Del.	Granddaughter	"	
"	200	Henry Alexis Flint	" "	Grandson	"	
"	200	Robert Morris Silliman	Montchanin, Del.	"	"	
8/20/48	300	Margareta S. Bredin	Greenville, Del.	Granddaughter	"	
"	300	Irenee du Pont, 3rd	3500 Linden Ave., Parkersburg, W. Va.	Grandson	"	
10/ 4/49	300	Constance E. Flint	Greenville, Del.	Granddaughter	"	
12/ 1/49	200	Jonathan B. Bredin	" "	Grandson	"	
1/ 5/50	100	Jonathan B. Bredin	" "	" "	"	
6/21/51	300	Cynthia du Pont	3500 Linden Ave., Parkersburg, W. Va.	Granddaughter	"	

GENERAL MOTORS CORP. COMMON

2/ 3/36	18/55ths	Mrs. Irenee du Pont	Granogue, Del.	Wife	"	
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GENERAL MOTORS CORP. 7% DEBENTURE

4/ 9/20	550	I. Sophie du Pont May	Granogue, Del.	Daughter	In Trust	Fidelity Phila. Trust
"	550	Margareta L. Greenewalt	Greenville, Del.	"	"	Co. (Wilmington Trust
"	550	Constance S. du Pont Darden	Charlottesville, Va.	"	"	Co. Successor Trustee)
"	550	Eleanor F. du Pont Rust	R.F.D. No. 5, Thomasville, Ga.	"	"	"
"	550	Doris E. du Pont	Deceased	"	"	"
"	550	Mariana du Pont Silliman	Montchanin, Del.	"	"	"
"	550	Octavia M. du Pont Bredin	Greenville, Del.	"	"	"
"	550	Lucille E. du Pont Flint	" "	"	"	"
6/20/28	100	Mariana du Pont Silliman	Montchanin, Del.	"	"	
7/ 5/29	100	Octavia M. du Pont Bredin	Greenville, Del.	Gift	"	

- (A) In March of 1915 six stockholders of du Pont Securities Co. contributed a total of 11,750 shares of its stock to a pool from which grants of stock were made to key employees of the du Pont Company. On March 2, 1915, Irene du Pont contributed 1,880 shares of stock and received 1,250 shares. Mr. R. R. M. Carpenter contributed 705 shares and received 1,250 shares.
- (B) In accordance with the terms of the trust instrument, the trust expired on January 1, 1950, and the beneficiary became full owner of the stock.
- (C) In accordance with the terms of the trust instrument, the trust expired when the beneficiary became 22 years of age and the beneficiary became full owner of the stock.

Alexis Irene du Pont	became 22 on	7-18-50
Jacques Turgot du Pont	" "	4-8-45
Stephen du Pont	" "	7-19-37
Benjamin B. du Pont	" "	5-25-41
Francis G. du Pont	" "	4-1-35

- (D) At some time prior to August 12, 1930, Irene du Pont gave to each of his eight daughters (Doris du Pont, Constance du Pont (Darden), Eleanor du Pont (Rust), Margaretta du Pont (Greenewalt), I. Sophie du Pont (May), Lucille du Pont (Flint), Mariana du Pont (Silliman), and Octavia du Pont (Bredin)) and to Irene du Pont, Jr., a note of Penas de Hicacos, S. A. (a corporation of which Mr. du Pont was sole stockholder), in the face amount of \$200,000. Following the death of Doris du Pont in 1930, the note which had been given to her was transferred to Mrs. Irene du Pont. In 1935, Penas de Hicacos, S. A. paid \$60,000 on each note. On December 16, 1940, Irene du Pont transferred to each note-holder 50 shares of Christiana Securities Co. common stock (then having a market value of \$130,000) and \$10,000 in cash, and received in exchange the note owned by each note-holder.
- (E) In accordance with the terms of the trust instrument, the trust terminated on January 1, 1950 and the beneficiary became full owner of the stock.
- (F) On October 29, 1931, Irene du Pont sold to Mrs. Irene du Pont 2,794 shares of Rubber Securities Co. common stock. Rubber Securities Co., which had 106,335 shares of common stock outstanding at the time, owned 314,000 shares of United States Rubber Co. common stock and 46,000 shares of United States Rubber Co. preferred stock.
- (G) On December 30, 1932, Irene du Pont sold 16,000 shares of Rubber Securities Co. common stock to Laird & Co. for \$234,360 and on the same day Laird & Co. sold 14,000 shares of the stock to Wilmington Trust Co., as trustee under a trust for Mr. du Pont's seven daughters, and also sold 2,000 shares of the stock to Wilmington Trust Co., as trustee under a trust for Irene du Pont, Jr. On December 29, 1932, Mr. du Pont had paid \$240,000 to Wilmington Trust Co. and had approved

Wilmington Trust Company's purchase of the Rubber Securities Co. stock in question.

- (H) On December 31, 1932, Irene du Pont sold to Lammot du Pont 1,556 shares of Rubber Securities Co. common stock. Rubber Securities Co. then had 106,335 shares of common stock outstanding and owned 314,000 shares of United States Rubber Co. common stock and 46,000 shares of United States Rubber Co. preferred stock.
- (I) See Note (F), above.
- (J) See Note (G), above.
- (K) See Note (H), above.
- (*) This trust expired when the beneficiary became 31 years of age.

Government's Exhibit No. 1213

ANSWER OF PIERRE S. DU PONT
TO PLAINTIFF'S. INTERROGATORY NO. 4

EXHIBIT D

	Shares held in own name	
	On 1/1/49	On 10/1/51

Delaware Realty & Investment Co.	0	0	
Christiana Securities Co. Common	4,792	4,792	
Christiana Securities Co. Preferred	954	204	
U. S. Rubber Co. Common	45,104	45,104	
U. S. Rubber Co. 8% Preferred	5,799	5,800	
General Motors Corp. Common	88,785	177,570	(2 for 1 split 9/28/50)
General Motors Corp. 5% Preferred	285	285	
E. I. du Pont de Nemours & Co. Common	8,224	33,225	(4 for 1 split 6/15/49)
E. I. du Pont de Nemours & Co. Preferred	0	0	

ANSWER OF LAMMOT DU PONT
TO PLAINTIFF'S INTERROGATORY NO. 4

EXHIBIT D

	Shares held in own name	
	On 4/1/49	On 10/1/51

Delaware Realty & Investment Corp.	None	None
Christiana Securities Co. Common	11,870	11,870
Christiana Securities Co. Preferred	None	None
United States Rubber Co. Common	3,712	3,712
United States Rubber Co. Preferred	None	None
General Motors Corp. Common	24,824	44,068—Stock split 2 for 1 9/28/50
General Motors Corp. Preferred	None	None
E. I. du Pont de Nemours & Co. Common	15,959	57,636—Stock split 4 for 1 6/15/49
E. I. du Pont de Nemours & Co. Preferred	None	None

8th listing - E. I. du Pont de Nemours & Co. Common - first column should be 15,959 instead of 15,989.

Govt. Trial Ex. No. 1215

ANSWER OF IRENEE DU PONT
TO PLAINTIFF'S INTERROGATORY NO. 4

EXHIBIT D

Shares held in own name

On 1-1-49 On 10-1-51

Delaware Realty &
Investment Co.

0 0

Christiania Securities Co.
Common

7,301 7,301

Christiania Securities Co.
Preferred

6,709 2,009

United States Rubber Co.
Common

21,200 20,000

United States Rubber Co.
Preferred

2,800 1,900

General Motors Corp.
Common16,000 32,000 9-28-50 — Split
 2 for 1General Motors Corp.
Preferred

0 0

E. I. du Pont de Nemours
& Co. Common3,000 12,000 6-15-49 — Split
 4 for 1E. I. du Pont de Nemours
& Co. Preferred

0 0

The Plaintiff's Interrogatory No. 4:

State for each of the years from 1915 for Christiana and from 1924 for Delaware, to June 30, 1949, inclusive, except where otherwise noted:

- (a) The name of each company whose capital stock you held, and the number of shares of its common and of its preferred stock (separately) you held;
- (b) The income you derived from each of such blocks of stocks in 1929 and 1948 only;
- (c) Your gross income, taxes, net income after taxes, dividend payments, and interest payments.

Answer of the Defendant Delaware to Plaintiff's Interrogatory No. 4:

See attached Exhibits C and D from Answer of Delaware.

Excerpt from Answer of Defendant Delaware to Plaintiff's
Interrogatory #4(a)

DELAWARE REALTY & INVESTMENT CORPORATION

**Holdings of Christiana Securities Company, Common
Stock, and E. I. du Pont de Nemours & Company,
Common Stock, from 1924 to June 30, 1949**

	<u>Christiana</u>	No. of Shares
5/31/24	Purchased	49,000
6/30/49	Balance	<u>49,000</u>
	<u>E. I. du Pont de Nemours</u>	
5/30/24	Acquired	30,847
8/10/25	Received as 40% stock dividend	12,338.80
9/19/25	Purchased	<u>20</u>
		<u>43,186.00</u>
3/12/26	Purchased	14
		<u>43,200</u>
10/28/26	Received in 2 for 1 split	43,200
		<u>86,400</u>
1/21/29	Received in 3 1/2 for 1 split	<u>216,000</u>
		<u>302,400</u>
7/15/30	Acquired via exercise of rights to purchase at \$80 a share, 1 additional for each 30 shares owned 6/5/30	10,080
		302,400 312,480
12/12/33	Sold	4,000
		<u>308,480</u>
1/11/35	Distributed as dividend to stockholders of Delaware Realty and Investment Corporation	4,000
		<u>304,480</u>
6/15/49	Received in 4 for 1 split	913,440
6/15/49	Balance unchanged to 6/30/49	<u>1,217,920</u>

5179

C O R R E C T I O N

In the last column, the total following the 7th listing under
E. I. du Pont de Nemours should be 312,480 instead of 312,580.

2898

GENERAL MOTORS RESEARCH CORPORATION
DAYTON, OHIO.

February 22, 1928

Mr. A. P. Sloan, Jr., Vice-President,
General Motors Corporation,
224 West 57th St.,
New York, N. Y.

Dear Mr. Sloan:

Please note the attached report which is somewhat in the nature of a descriptive specification covering the methods of finishing automobiles with the 'Ducco' enamels made by the duPont Company.

We now have new materials in blue, green and black, with the toughness very markedly improved and the covering qualities quite satisfactory. These various colors have been applied to panels subjected to our acceleration tests under the ultra-violet light and show up better from the standpoint of durability than anything submitted heretofore. It is very desirable that any of our plants, having any of the older materials on hand, dispense with the same and order the new product.

We are anxious now to make all the speed that is possible so that an early decision may be reached. We owe this to the duPont Company who are besieged with requests for this material from various motor-car companies.

We have also given in the report tentative methods of finishing that seem necessary to secure proper adhesion. The laboratory viewpoint may differ from that of some of our committee members, appointed to study the question of finishes for bodies. However, we have tried to present our facts in an argumentative way, showing the reasons for each step.

Very truly yours,

F. O. Clement

Director of Research

CC: Rice, Widman, Bassett, Weckler, Hannum, Rogers, Knudsen, MacQuaid,
Mott, Kavanaugh, Bergland, Hardy, Scott, Barton, Beardslee and Sloan.

FCC-G



NOTE: "RECEIVED FEB 26 1923 A.P. SLOAN, JR." is stamped at top. Routing stamp, bearing initials A.P.S., J.L.P., [], []/[], W.J., A.T.[] and W.P.A.; with check marks inserted by hand after "A.P.S." and "A.T.[]".

2859

December 18, 1944

Mr. Alfred P. Sloan, Jr., Chairman,
General Motors Corporation,
New York City, N. Y.

Dear Alfred:

I must apologize to you for having "run out" on you with respect to luncheon today. I had a tentative appointment with Eugene du Pont to discuss a matter which seemed of considerable importance, and expected to see him this afternoon, but just after speaking to you, after the meeting, Gene informed me that he was about to leave for Florida for a protracted stay, so that if I was to see him at all it had to be immediately. I am sorry that our luncheon was broken up.

While it was not the subject I was discussing with Gene, he mentioned to me the position held by his nephew, Bernard Peyton. Bernard is the son of Eugene's sister, who married William C. Peyton, and, being the only son, has, I believe inherited the fortunes of his father and mother. Bernard is a Director, Vice-President and Treasurer of the New York Air Brake Company. I understand his managerial activities are in the manufacturing or operating side. His previous experience was as the active head of a comparatively small company, manufacturing locomotive stokers.

As the New York Air Brake Company seems to be a company of some \$20,000,000 assets and doing an annual

-2-

business of about the same amount, his business experience seems to have been in activities of substantial importance.

2900

Without having looked the matter up, I would think his ownership in the du Pont Company, would amount to something of the order of 60,000 shares of common stock, which is more than enough to give him a predominating interest in the affairs of that company; and indirectly in General Motors.

Bernard is now about 45 years of age, I think, but appears to be considerably older than that. I wonder if this would be a suggestion for consideration from the stand point of Directorship in General Motors?

I do not know the nature of the New York Air Brake Company's business, but hardly think it would conflict or compete with any G. M. activities.

Yours sincerely,

CHAIRMAN OF THE BOARD,

LduP/MD

NOTE. "File Copy" stamped across each page of letter.

(DP)
GMC-542

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK, 19, N. Y.

December 29, 1944

Mr. Lammot duPont
Chairman of the Board
E. I. duPont deNemours & Company
Wilmington, Delaware

RE: GENERAL MOTORS ORGANIZATION—BOARD OF
DIRECTORS MEMBERSHIP

My dear Lammot:

Thanks for your letter of December 18th. The matter of the luncheon the other day was not important. I always look forward with pleasure to having lunch with Walter and you, and whoever may be available, because the association means a great deal to me. I realize that it takes time and, as a matter of fact, I could well use the extra hour that was available to me by returning on an earlier train.

Now, regarding the matter of Bernard Peyton, of course, I do not know him personally. Thinking perhaps I could get some reaction from Don, I asked him what he thought, but he does not know him personally. The chances are that none of the rest of us do: Certainly if he is the owner of such a large block of your common stock, involving indirectly a large ownership in General Motors stock, he would be qualified from that point of view. Just how he is personally, of course, again I don't know because I do not

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(DP)
GMC-542

know him. I would think that as Vice President and Treasurer of the New York Air Brake Company he would have a background of business experience that would be helpful. I would be entirely favorable to him if you feel he is qualified in the more general and personal respects. Personally, I would assume that he well might be. This is particularly true if, as Vice President, he deals with the manufacturing and operating side. As you say, that is what would help us the most.

How would you suggest I proceed? If you wish me to I will be glad to make some inquiries and see if I can get any further information, but in view of the fact that you know him, what more is needed? If you take that position and will let me know, we could have his name go before the Board at the January or, perhaps better, the February meeting, whichever appeals to you as desirable.

Very truly yours,

/s/ ALFRED P. SLOAN, JR.
Chairman

APSJr./K

NOTE. "A.P. S.—also C. of C. 1/25" written at top of letter. "Received Jan. 2-1945 Lammot duPont" stamped at top.

Copy to: Mr. L. du Pont
Building

PERSONAL & CONFIDENTIAL

January 7, 1941.

Mr. Donaldson Brown
General Motors Corporation
1775 Broadway
New York, N. Y.

Dear Don:

You will recall that I did not get out to the special meeting of the Policy Committee in Detroit a week or two ago. It happened to be the day of our Finance Committee and Board meetings here. For this reason I was not acquainted with the proposed changes in the organization of General Motors until I learned of them in the Policy Committee meeting yesterday. It may be due to my unfamiliarity with all of the background leading up to these changes that I am more impressed than I should be with what appeared to me to be certain shortcomings.

I think we will all agree that the financial side of General Motors has always been an extremely important function in the General Motors management. In fact, there are times when the financial aspects were of such importance as to control the affairs of the Corporation. This has been due I think not only because of the caliber of men which have headed up the financial affairs of the Corporation, but because financial questions were of themselves so important.

I have always been of the hope that we might bring men along in the financial or even in other departments of

the Company in a manner that we would never lack for a strong man to head up the financial affairs.

I was comfortable in the feeling that in Albert Bradley we had such a man, and I hoped he would bring along behind him other men of equal caliber. When I learned yesterday that Albert was to be taken out of the financial department, and not only had no provision been made to fill his place immediately but that there seemed to be considerable doubt as to whether such a man was available, I was naturally quite shocked.

The financial position of General Motors today is so strong that I think it is very easy for us to feel that the

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importance of the financial aspect may not be as critical as heretofore. On the other hand, it seems to me that never was there a time in the life of the great corporations of this country when this question was more important. The rapidly changing financial and economic aspects of business life in this country, the enormous demands from the National Defense Program involving the tax question in such an important way and the critical moves which are being made in all countries involving the very fundamentals of our economic and financial life seems to me to make it more important than ever that we should have men of ability, background and experience in this work.

Alfred Sloan reached his position in General Motors under quite different conditions than men rise in large organizations today. He came up through the small corporation, and was, therefore, always impressed with all aspects of business management, particularly the financial aspects. I have always felt that he had a remarkable appreciation of

the financial side of business for one who was so active and able in the executive and technical aspects. During his regime I think that we had from the operating side always a sympathetic appreciation of the financial aspects of business. I am not meaning to detract in the slightest from the remarkable abilities of Mr. Wilson when I say that he did not have that training, for which reason it is not surprising to find that he has not the same experience or capacity or appreciation of that side which Alfred had. This makes it more important than ever that the financial side of the business should be organized in strong hands, in hands which can make the financial aspects of the business felt and appreciated throughout the organization.

The move of Bradley to the operating end has been made. I presume it would be awkward to reverse that at this time. However, I feel that if I had been in on the discussions at an earlier date I would have endeavored to urge that Bradley be retained in the financial department until his successor could be found. It would have seemed to me very much easier to find a man to fill the position now to be taken by him than to spare him as Head of the financial department if there is no one to take his place. I even think that the return of Bradley to the financial department might be reconsidered.

However, on the assumption that such a move is out of the question, I do feel that we should move up quickly on the filling of that vacancy. It would, of course, be preferable to make such a selection from the General Motors organization. On the other hand, if it is the conclusion of you, Alfred and Albert that we lack, in the General Motors organization, a man to fill that position I think we should undertake to secure the services of the best man we can find in the United States for that purpose.

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I have seen something of Donner over the past years, but I do not feel that I know him well. From the standpoint of his general capacities I can only say that in every matter in which I have had the opportunity of passing upon his work I have felt he did it with great ability. I know nothing, for instance, of his capacity to handle an organization and to develop men under him. That is important.

The suggestion was made at the meeting that we might defer the selection for two or three months inasmuch as there was a feeling that Donner was not yet quite ready. Donner has been in the organization for many years. He is, I understand, thirty-eight years old, which is plenty old enough if he has the capacity. Certainly a month or two or three more will not materially change Donner's capacities.

I do not feel that I know John Schumann very well, though he seems to have very ably managed the work under his charge. He is an older man and perhaps for that reason may have more prestige in the organization even though he may not have the technical capacity which Donner has. At least he should know sound finances and has had a good deal of experience and association with the corporation for many years.

I do not make this as a suggestion, but merely as indicating the type of move that perhaps might be worth considering. Would it be well to put John Schumann in as the Head of General Motors finances with Donner as his first assistant?

They should both be made Vice Presidents and perhaps John Schumann a member of the Policy Committee with Donner a member of the Administration Committee in order to carry into the operating side of the business the financial

viewpoint. It will be said of course that Bradley takes that with him into that new work. On the other hand as Bradley becomes more and more involved in operating problems and therefore of necessity further removed from the financial aspects of the Corporation as a whole, the need for carrying the financial viewpoint into that work will be ever-increasing.

You mentioned yesterday that you would like to discuss this sometime. I would of course be very glad to do so, but I thought that time might be somewhat delayed and that maybe this letter might serve some purpose in the meanwhile. I assure you that it is not dictated in the slightest way in criticism of what has been done or what is being done; but is merely a somewhat disconnected effort to carry to you my viewpoint of the tremendous importance of doing something promptly to fortify the financial function in General Motors.

Sincerely yours,

PRESIDENT.

WSC:R

NOTE. "File Copy" is stamped across each page of document.

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MANAGEMENT PROXY HOLDERS

(Persons designated by the management of the respective companies to receive the proxies of stockholders and to vote the stock at stockholders' meetings.)

<u>Year</u>	<u>Christiana</u>	<u>Du Pont</u>	<u>General Motors</u>
1919	Pierre S. du Pont	Pierre S. du Pont Alexis I. du Pont John J. Raskob	No record
1920	Pierre S. du Pont	Irenece du Pont John J. Raskob Alexis I. du Pont	Pierre S. du Pont W. C. Durant J. J. Haskell J. M. Haskell T. S. Merrill
1921	Pierre S. du Pont	Pierre S. du Pont H. C. Haskell Alexis I. du Pont	Pierre S. du Pont J. J. Haskell J. A. Haskell T. S. Merrill
1925	Pierre S. du Pont Irenece du Pont Lammot du Pont J. J. Kinnison	Pierre S. du Pont H. G. Haskell Charles Copeland	Pierre S. du Pont A. P. Sloan, Jr. J. J. Haskell T. S. Merrill
1930	Pierre S. du Pont Irenece du Pont Lammot du Pont	Pierre S. du Pont Lammot du Pont Charles Copeland	Lammot du Pont A. P. Sloan, Jr. D. Brown J. T. Smith
1935	Pierre S. du Pont Irenece du Pont Lammot du Pont A. Felix du Pont	Pierre S. du Pont Lammot du Pont W. S. Carpenter, Jr.	Lammot du Pont A. P. Sloan, Jr. D. Brown J. T. Smith
1940	E. H. Tinney Pierre S. du Pont Lammot du Pont H. Fletcher Brown R. R. M. Carpenter	Lammot du Pont W. S. Carpenter, Jr. A. B. Echols	A. P. Sloan, Jr. D. Brown W. J. Knudsen J. T. Smith
1945	None	Lammot du Pont W. S. Carpenter, Jr. A. B. Echols	A. P. Sloan, Jr. D. Brown C. E. Wilson J. T. Smith

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Year Christians

1947 None

Du Pont

Lammot du Pont
W. S. Carpenter, Jr.
A. B. Echols

General Motors

A. P. Sloan, Jr.
C. E. Wilson
A. Bradley
J. T. Smith
D. Brown

1949 None

Lammot du Pont

W. S. Carpenter, Jr.
C. H. Greenewalt
Lammot du P. Copeland

A. P. Sloan, Jr.
C. E. Wilson
A. Bradley
H. M. Hogan

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To EXECUTIVE COMMITTEE

SERIAL NO. U-119

FROM DEVELOPMENT DEPARTMENT. March 31st 1917.

PROGRESS REPORT.

The last progress report on plans for excess plant utilization was for the month of December 1916, so that the present report has been prepared to cover the first quarter of 1917.

GENERAL PLANS:

During January reports were submitted on the general plans and forecasts for new industries and the Executive Committee's action of February 5th approved these plans. Development work has subsequently been carried out accordingly.

VEGETABLE OILS:

With respect to linseed oil (for paint, varnish, oil cloth and linoleum) and castor oil (for fabrikoid and turkey red oil) we received a few days ago the special report and plans from the expert engaged, Mr. Glenn H. Pickard. No report or proposition will be submitted now as we shall probably prefer to discuss the entire subject of vegetable oils in one report. This is because the manufacture of these two oils is hardly very profitable except on a very large scale unless suitably connected with other industries.

Our study of the other vegetable oils (especially coconut oil from copra, palm oil, soya bean oil, Chinese wood oil, etc.) has not progressed sufficiently as yet to warrant a discussion, but is now receiving active consideration.

FOOD PRODUCTS:

Arrangement has been made to visit unofficially in the

-1-

near future the plant of the "American Butterine Company", a small concern in Jersey City. We have also had some interesting conversations with Mr. Tamboer, the Vice President of this concern, indicating the probable value and possible development of the industry. This matter will be followed up.

SOAP, GLYCERIN AND
FATTY ACIDS:

Considerable time has been devoted to the study of the value to the du Pont Co. of the Fels Soap Company. The last official action was as of February 5th to the effect that no further offer be made to Fels & Co. at this time and due to Mr. Samuel Fels being unwilling to meet us on a price and form of payment acceptable to our Company. While we have undertaken no further negotiations with Mr. Fels the subject has continued to receive our attention inasmuch as changes in business conditions might bring about another and more favorable opportunity for negotiations.

More recently, anticipating the difficulties or even improbability of negotiating a deal with Fels & Co. we have undertaken a study of other soap companies and at present have especially in mind Eavenson in Camden and Kendall in Providence. These two concerns are both relatively small and have no great value from a good will standpoint, but either might serve as a starting point.

We have recently discussed the Reuter process (for glycerin and fatty acids) more definitely with Mr. Poucher,

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who controls the rights, and expect to bring this matter to a conclusion within a short time.

PAINT, PIGMENTS & VARNISH:

Since the last progress report the negotiations for acquisition of Harrison Bros. & Company have been completed, the purchase consummated and the du Pont Co. took possession of the business and properties about March 20th under the name of Harrisons, Inc. Through this purchase the du Pont Co. is definitely established in the paint, pigment and varnish business. However, Harrisons, Inc. are

—2—

not as strong as desirable with respect to colors and varnish. It is therefore the intention to give attention to these two branches and it seems clear that the former would be admirably solved by acquisition of Cawley, Clark & Co. of Newark, foremost color makers in this country and joint owners of Beckton Chemical Co. with Harrisons, Inc. The manufacture of colors is a profitable industry and not only of assistance to the paint industry, but relatively of even more value for the consumption of dyestuffs and also the use of heavy chemicals, especially sulphuric acid.

Relative to varnish it will be necessary for Harrisons, Inc. to engage the services of a varnish expert with ability to develop such industry. Anticipating the possible advisability of acquiring a going varnish company consideration will be given to such companies and especially those in the printers ink manufacture as well, inasmuch as such concerns are large consumers of both varnish and colors. Several firms have already been selected for study.

KUMARON:

This subject will now be taken up for commercial development by Harrisons, Inc. with respect to paints and varnish. At the same time the Chemical Department has been requested to experiment on the use of this resin for use in linoleum cement as a substitute for linseed oil and gums. This work is progressing with encouraging results.

ARTIFICIAL SILK:

This subject has been studied actively during the past three months and during March two lengthy special reports have been submitted giving a complete discussion of the available information.

Relative to the Viscose Company the negotiations brought out clearly that an outright purchase would not be attractive to our Company, because of the excessive investment relative to plant utilization and an extraordinary price

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asked for the good will and business opportunity. However a plan of deferred payments on a profit sharing basis has been prepared and if accepted by the Executive Committee negotiations will be undertaken accordingly. We are reluctant to give up the possible purchase, because we firmly believe in the great future possibilities.

There is no change in the situation relative to the copper-ammonia process because negotiations cannot be conducted with the German concern. We have recommended a plan which would keep the subject open for us. In the meantime we have been advised by cable from London, that the expert, whose services we engaged, Mr. Clayton

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Beadle, has submitted his report to our London Office and should be in our hands within a week or ten days.

Preliminary negotiations have been satisfactorily concluded with the Tubize Co. for the nitrocellulose silk process. The plan is entirely on a profit sharing basis to be controlled and owned by the du Pont Co., with no cash payment, no royalty and with a guarantee to the du Pont Co. relative to returns on the investment. Since our special report was submitted additional information has been obtained in favor of this process.

The London office has spent some time negotiating with Count Chardonnet in England relative to his new developments in this industry, but it appears doubtful whether any arrangement can be made and it would be unnecessary if an agreement is reached with Tubize Company.

The next step on all of these artificial silk subjects will depend on the actions to be taken by the Executive Committee on the recommendations submitted.

WATER SOLUBLE CHEMICALS:

Inorganic.

To some extent this subject is covered by the acquisition of Harrisons, Inc. With respect to other chemicals we intend to give attention only to a few.

Phosphoric Acid.

A new process is under development jointly by chemists

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of the U. S. Government and a New Jersey baking powder company for the production of pure phosphoric acid. We

are keeping in touch with this because if successful it would be of considerable interest for Hopewell.

Hydrosulphites.

These are important as an adjunct to a dyestuff business and the manufacture would probably be particularly suitable for Hopewell. The Chemical Department has been requested to study the process of manufacture and this work is well under way with promising results.

Ferrocyanides.

These are chemicals used largely in color making. Our interest at this particular time is due to an offer from the principal American producers, Henry Bower Mfg. Company of Philadelphia, to sell their business to our Company. This will be investigated. If this study leads to no purchase, we shall probably do nothing further now relative to this chemical.

Organic.

Since the last report arrangements have been made for the manufacture of tartar chemicals at Hopewell. The Pan Chemical Company, a small concern manufacturing cream of tartar has been acquired and the apparatus is being removed to Hopewell. Information has also been received relative to the production of tartaric acid the plans are being made for the production of some on a moderate scale. It is intended to operate this tartar industry on a moderate scale at Hopewell until the extraordinary business at the plant declines and in the meantime prepare for expansion.

Other chemicals receiving attention are oxalic and formic acids. At our request the Chemical Department is

conducting experimental work on the processes of production and good progress is being made. We are giving attention to a new process for citric acid.

ORGANIC CHEMICALS:

The plans for the dyestuff industry for Deep Water Point are proceeding as arranged in the hands of the Operating Department and this Department, represented by Dr. Chambers.

A great deal of attention has been given to organic

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chemicals other than dyes. Of concerns in the business the Schaefer Alkaloid Works appeared to be the only one worthy of study, having the best reputation and the greatest variety of suitable products. This subject has been covered by several special reports. We are exceedingly anxious to acquire this concern, but negotiations have brought out that the owners demand a price at least for the present, considerably above (say 20%) what we would consider proper to offer.

In the meantime at our request the Chemical Department is experimenting on the processes of manufacture of several chemicals, which we consider desirable of production and the manufacture of which can probably be developed through our Company's own talent. These chemicals are especially methylsalicylate, benzylalcohol, benzyl acetate, benzyl benzoate and a few similar chemicals intended for production at Parlin.

Through the purchase of the Delaware Acid Works it has been made possible to undertake large scale experimental work on salicylic acid. The Chemical Department has

been requested to study the manufacture of benzoic acid and it is hoped large scale experimental work can be undertaken as soon as the new chlorine plant has been erected at Deep Water Point. Due to the close connection with dye-stuffs these two organic acids may be considered part of that industry, though they are equally important for organic chemicals in general.

COTTON PULP (FOR PAPER) AND
THE PAPER INDUSTRY:

At our request the Chemical and Engineering Departments have continued experimental work on the proper purification of short fibres for paper stock, but due to market conditions practically no attention has been given to the commercial development. We believe the time has come when this subject can be reopened profitably and intend to proceed with the study at an early date.

—6—

Relative to a paper industry we have been skeptical and still are—with respect to the profits in the manufacture of paper. However, we have been told from competent quarters that the manufacture of paper stock and chemical wood pulp is a very remunerative business. It is intended to give renewed attention to this subject, because of the possibility of material utilization of Hopewell plants.

~~APPROVED BY:~~

R. R. M. CARPENTER (Stamp)

~~PREPARED BY:~~

FIN. SPARRE (Stamp)

NOTE. In upper right hand corner of first page appears:
"Noted, W. S. C. Jr." in pencil.

—7—

To: EXECUTIVE COMMITTEE
From: DEVELOPMENT DEPARTMENT

SERIAL No. S-2040
February 10, 1925

PROPOSED CONSOLIDATION WITH
THE VISCOLOID COMPANY

One of the leading manufacturers of pyroxylin plastics is the Viscoloid Company, Inc. with office and factories at Leominster, Massachusetts. It is rated as the fourth largest manufacturer, du Pont, the Celluloid Company and the Fiberloid Company being larger. It manufactures a line of pyroxylin sheeting, as well as a line of moderate priced articles and novelties.

In the course of business contact, Mr. F. B. Davis, jr., General Manager of our Pyralin Department, has become well acquainted with Mr. Barnard W. Doyle, the President and Treasurer of the Viscoloid Company, and owner of three-quarters of the company. Recently Mr. Doyle brought up the question to Mr. Davis regarding a possible merger of our pyralin business with his company, and the matter was discussed in a very preliminary way. Mr. Doyle desires an official expression of the attitude of the duPont Company towards such a possibility before completely opening up the necessary books and information that we would require. We have gone over the matter with Mr. Davis who has presented the preliminary information which Mr. Doyle has given.

As this proposition is not a question of the purchase of the Viscoloid Company, as Mr. Doyle states that he does

not desire to offer the company for sale, but is in the nature of a merger, it will be necessary for a new company to be formed which would absorb the Pyralin Department of the duPont Company and absorb the Viscoloid Company. The

—1—

approximate basis on which such a merger would take place would be the asset value, cash and liabilities being eliminated on both sides. As a basis of comparison the 1923 appraisal of the Viscoloid Company shows a plant value of \$4,125,000 and against this our Pyralin Department plant values stand at \$5,751,000. These are presumably on equal depreciation basis but should be examined further. The Viscoloid Company's accounts receivable are \$600,000 and the Pyralin Department's \$1,800,000; and respective inventories are \$1,750,000 and \$3,850,000. The average annual sales for the years 1917 to 1924 inclusive, are \$4,800,000 for Viscoloid and \$9,100,000 for the Pyralin Department. The reason that the Pyralin Department's accounts receivables are three times that of Viscoloid with slightly less than twice the volume of sales, is due to the marketing arrangement of Viscoloid, i. e. that they sell all their articles through the Pacific Novelty Company which is a separate corporation and not owned by Viscoloid. The sales of the two companies for 1923 and 1924 are as follows:

	<u>Viscoloid</u>	<u>duPont</u>
1923	\$5,600,000	\$9,900,000
1924	5,100,000	7,600,000

The average annual earnings for the years 1917 to 1924 for Viscoloid were \$800,000 and for du Pont \$125,000. For the years 1923 and 1924 the average annual earnings for Viscoloid were \$1,000,000 and for du Pont \$800,000.

The actual average earnings as shown by the books of the Viscoloid Company for these two years is \$1,200,000 but \$200,000 has been deducted in this discussion as a rough estimate of the profit due to the use of scrap material in 1923 and 1924 which was written down in 1921.

The principal reason given by Mr. Doyle for suggesting this merger is his desire to place his organization on a more stable footing as it is now essentially a one-man organization, in order that his estate may enjoy a more certain income. He also feels that he has too much of his assets in a single enterprise and desires in this arrangement to liquidate

—2—

part of his holdings. We feel that another reason which influences him is the headway that the Pyralin Department is now making in the business.

There are a number of reasons that make this merger look attractive. The business of the Viscoloid Company in articles is more supplementary than competitive with our present pyralin business, as Viscoloid is the largest manufacturer of a moderate to low priced line, and they market no high grade line of articles, such as the first grade articles put out by the Pyralin Department. There is a considerable opportunity for savings in both selling expense and cost as indicated by the letter of Mr. F. B. Davis in the attached exhibit. Without any cash outlay other than our subscription in the new company in proportion to our stock ownership for some operating cash, we are able to consolidate a competitive line of sheeting and acquire a very profitable and supplementary line of articles. The Viscoloid Company sell approximately half of their sheeting as articles, whereas du Pont Company sells approximately one-third.

Inasmuch as the earnings of the past years offer no basis on which any terms could be arranged, the asset basis has been considered only, and in so doing, we would propose to consider duPont Company's asset basis on plant value \$6,000,000.00 and the Viscoloid plant value as \$4,000,000. The accounts receivable and inventory for duPont Company would be considered at \$5,600,000 and the same items for Viscoloid at \$2,400,000. This would make a total contribution for duPont of \$11,600,000 and for Viscoloid \$6,400,000, making the proposed new company have assets of \$18,000,000. It would be necessary to subscribe an additional \$1,000,000 for working cash. On the basis of estimated earnings for 1925, 1926 and 1927, Mr. Doyle estimates for the Viscoloid Company \$500,000 to \$700,000, and Mr. Davis estimates for duPont \$800,000 to \$1,100,000, making the combined estimated earnings for a new company

—3—

of \$1,300,000 to \$1,800,000. These figures do not take into account any of the savings in sales expense, costs and other items which will ensue from the consolidation. It is suggested that the stock of the new company be divided into two classes, preferred and common, the preferred for example, being divided on the basis of contribution of assets, and the common on somewhere between 60 and 70 percent for duPont and 40 and 30 for Viscoloid. This proportion is quite approximate as Mr. Doyle wishes to liquidate approximately \$2,000,000 of his share in the preferred issue, either by sale to us in exchange for duPont Debenture, for example, or otherwise, or a sale to outsiders who will purchase it from an investment viewpoint.

The information given in this report has been obtained by Mr. Davis from Mr. Doyle, and while it will require considerable checking up and elaboration before any final decision can be made as to terms and structure of the merger, we believe that this is sufficiently correct to enable the Executive Committee to pass upon the recommendation herein offered.

As to any disadvantages from such a merger, we do not see any at this writing, as there is no trade-mark used by Viscoloid, so that the Pyralin trade-mark could be expanded immediately to this line, if it were considered good policy, and as stated by Mr. Davis, there will be no conflict of organization. From a manufacturing standpoint, Mr. Davis advises us that valuable information on manufacturing would not be contributed entirely by the duPont Company.

RECOMMENDATION:

We recommend that the Development Department be authorized to advise Mr. Doyle that the duPont Company is interested in the merger of our Pyralin business with the Viscoloid Company along the general line of the formation of a new company to take over both businesses, provided further study of the proposition convinces us of its

—4—

desirability, and provided that a satisfactory basis of values can be agreed upon.

PREPARED BY:

F. S. MACGREGOR.

(stamp)

APPROVED BY:

FIN SPARRE

(stamp)

(5203)

NOTE. "Received Feb 10 1925 Lammot du Pont", Executive Committee Sec'y No. 1676", "Return to Executive Committee Room 9069", and "Return to Room 9059" stamped on page 1. In the upper left hand corner of that page is the written initial "R" above a question mark, below which appears the handwritten notation "Laffey doubtful. HO 1 wk. for Laffey opinion". In the upper right hand corner of page 1 is the following handwritten table:

	years (?) 1922				
	1923				
	S	S	A	A	
du P.	35	34	22	28	
Cel.	25	24	15	13	
Fib:	25	24	11	7	
Visc.	15	9	7	10	
<hr/>					
Dix (?)	100	6	0	0	
Misc.		3	2	45	42
<hr/>					
du P. & Visc.	43	46	29	38	

(2924)

(5204)

Company	1924 Total Sales	1924 Profit										
DuPont Company	\$2,000,000	200,000	\$2,000,000	200,000	\$2,000,000	200,000	\$2,000,000	200,000	\$2,000,000	200,000	\$2,000,000	200,000
Collins J. C. Company	65,000,000	6,500,000	65,000,000	6,500,000	65,000,000	6,500,000	65,000,000	6,500,000	65,000,000	6,500,000	65,000,000	6,500,000
Fiberland Corporation	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000
Visefield Company	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000	55,000,000	5,500,000
Hanes Illustration Works	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000
Heston Company	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000	2,000,000	200,000
Landers, Pease & Clark	500,000	50,000	500,000	50,000	500,000	50,000	500,000	50,000	500,000	50,000	500,000	50,000
Standard Pteryxoid Prod. Co.	500,000	50,000	500,000	50,000	500,000	50,000	500,000	50,000	500,000	50,000	500,000	50,000
Arthur Battin Works	250,000	25,000	250,000	25,000	250,000	25,000	250,000	25,000	250,000	25,000	250,000	25,000
Rubber & Celluloid Products Co.	200,000	20,000	200,000	20,000	200,000	20,000	200,000	20,000	200,000	20,000	200,000	20,000
Mayers Brothers	200,000	20,000	200,000	20,000	200,000	20,000	200,000	20,000	200,000	20,000	200,000	20,000
Saturn	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000
Melville and other firms	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000
Mfg. Contractors	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000	100,000	10,000
TOTAL	\$4,850,000	480,000										

TOTAL

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EXHIBIT "A"

February 9, 1925.

To: DEVELOPMENT DEPT.—F. S. MACGREGOR.
FROM: PYRALIN DEPARTMENT.

PROPOSED CONSOLIDATION WITH THE
VISCOLOID COMPANY

A consolidation with the Viscoloid Company presents advantages that appear of sufficient importance for the DuPont Company to give them careful consideration, and I have endeavored to give you a brief outline of the more important ones:

1. Broadening the field of distribution for sheeting through the medium of cheap Articles not now manufactured by the DuPont Company. The Viscoloid Company makes and sells a line of Articles that are distributed mainly by 5¢, 10¢ and 25¢ stores, such as Woolworth, Kresge, etc. These Articles are toys, rattles, cheap combs, and similar merchandize. The volume which they sell to this trade amounts to between \$2,000,000 and \$3,000,000 annually, and although the margin of profit on the Articles may be narrow nevertheless it is an excellent outlet for between \$1,500,000 and \$2,000,000 worth of sheeting on which they realize full market value.
2. The Viscoloid Company through years of experience has become expert in making into cheap Articles sheeting (originally manufactured for outside trade) that was not up to standard and thereby getting much higher values

for it than is possible if sold as second-grade stock. This would be of considerable assistance to the DuPont Company in utilizing the seconds and material of faulty manufacture made at Arlington which has always been quite a problem for the Pyralin Department.

3. The following are important savings that should be effected by such a consolidation:—

Reduction in selling expense by eliminating duplication.

Saving in freight on stock shipped by the Viscoloid Company into the New York district, and on DuPont stock shipped into the New England district.

Lowering of costs through the simplification of sheeting lines manufactured at each plant and by interchanging operating data and competition between costs at the two plants.

Reduction in the cost of paper by using more of the Norwich plant's capacity.

Some gain to the DuPont Company by the Viscoloid Company purchasing its acid requirements from Repauno.

Reduction in stocks of raw materials and finished product, and even make available for sale or other use some part of the permanent investment at Arlington.

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It is conservatively estimated that the saving in manufacturing and selling would be between \$300,000 and \$600,000 per year.

It is estimated that the reduction in stocks should amount to \$1,000,000.

4. The Viscoloid Company has been a one man organization and faces the necessity of increasing its executive and development personnel in order to put their organization on a sound basis, should anything happen to their President, Mr. B. W. Doyle. The Pyralin Department probably has in its organization men who could be used to round out the Viscoloid Company's organization, giving it the necessary strength with little extra expense, and also providing broader opportunities for the Pyralin Department's men.

The Viscoloid plant is fortunate in that the Leominster district provides an adequate supply of labor eminently suited to this industry. The layout and construction of the buildings is excellent and generally far superior to the equipment of the other manufacturers of pyroxylin plastics in this country. The company has been unusually successful since its formation, even through periods of depression, and is the outstanding one among our competitors with whom we would consider consolidating.

The figures which Mr. Doyle has furnished me are of a very general nature and form the basis of the Development Department's report, indicating that an alliance could be made with the Viscoloid Company on a favorable basis. I think that such a step would be of advantage to the DuPont Company and would be glad to have an opportunity of appearing before the Committee at the time this matter comes up for discussion.

F. B. DAVIS, JR. (Stamp)
GENERAL MANAGER

FBD:R

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Answer to Plaintiff's Interrogatory V
of December 7, 1931

Certain Chairmen and Members of the Purchasing Committee
of General Motors Corporation, 1928-1931, incl.

Chairmen

- 1928 J. L. Pratt, Vice-President in Charge of Accessory Div.
1929-31 C. E. Wilson, Vice-President

Members

- 1928-29 C. G. Allen, Purchasing Agent of Buick
1928-29 W. F. Armstrong, Production Mgr., Oldsmobile
1928-31 A. J. Campau, Head of Salvage Dept., Central Office
1930-31 C. A. Crusoe, Purchasing Agent, Fisher Body
1928-31 D. F. Hulgrave, Manager of Purchases - Cadillac
1931 J. B. Jackson, Executive Secretary
1930-31 R. L. Kurts, Purchasing Agent, Buick
1928-30 Jas. Lynch, Executive Secretary, General Purchasing Committee
1928-31 C. C. Miller, Purchasing Agent, Oakland
1928 C. S. Mott, Vice President, Detroit
1928-31 D. P. O'Keefe, Purchasing Agent, Chevrolet
1929-31 J. L. Pratt, Vice-President, Accessory Div.
1928 A. P. Sloan, Jr., President
1930-31 Lew Stewart, Production Manager, Oldsmobile
1928 J. T. Stratman, Director of Purchases, Fisher [2929]

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Stock held directly or beneficially by members of the Du Pont family, including individual defendants and beneficiary defendants as defined in the complaint as amended, in Delaware, Christiana, U. S. Rubber, ~~and common~~, and Wilmington Trust Co., as of June 1949.

	<u>Delaware</u>	<u>Christiana</u>	<u>U.S.Rubber</u>	<u>Wilm. Tr. Co.</u>
I. PIERRE S. DU PONT		4,792	45,104	1,832
II. THE FAMILY OF IRENEE DU PONT				
IRENEE DU PONT		7,301	21,200	240
Irene du Pont (spouse)		55	13,406	
IRENE SOPHIE DU PONT MAY	4,738	175	5,888 6/7	
Ernest Nugent May (spouse)		880		
Ernest Nugent May, Jr.	1,628	30 ¹	525	
Irenee du Pont May	1,628	30 ¹	525	
Thomas Henry May, minor	1,628	30 ¹	525	
John Eric May, minor	1,628	30 ¹	225	
MARGARETTA DU PONT GREENEWALT	5,751	175	5,888 6/7	
Crawford Hallock Greenewalt (spouse)		72 ⁴		
Nancy Greenewalt Frederick	1,833	78 2/3		
David Greenewalt	1,833	78 2/3		
Crawford Hallock Greenewalt, Jr., minor	1,833	78 2/3		

1 Includes remainder in corpus of trust (life income to another).

II. THE FAMILY OF IRENÉE DU PONT
(Cont'd.)

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	<u>Delaware</u>	<u>Christiana</u>	<u>U.S.Rubber</u>	<u>Wilm. Trust Co.</u>
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CONSTANCE DU PONT DARDEN 6,750 1,175 7,088 6/7

Colgate Whitehead Darden, Jr. (spouse)			3,750	
Colgate Whitehead Darden III	1,500		325	
Pierre Samuel du Pont Darden, minor	1,500		325	
Irene Sophie du Pont Darden, minor	1,500		325	

ELEANOR DU PONT RUST 5,250 1,165 6,213 6/7

Philip Goodenow Rust, Jr. minor	1,500			
Francis Gurney du Pont Rust, minor	1,500			
Henry Rust, Minor	1,500			
Richard Cutts Rust, minor	1,500			

MARIANA DU PONT SILLIMAN 7,960 1,125 6,688 6/7 100

Henry H. Silliman (spouse)	67			
Henry H. Silliman, Jr., minor	612	14	60	
Doris du Pont Silliman, "	612	12	160	
Eleanor Howland Silliman, "	612	15	85	
Mariana du Pont Silliman, "	612		85	
Robert Morris Silliman, "	775		60	

OCTAVEA MARY DU PONT BREDIN 9,094 1,175 6,888 6/7

John Bruce Bredin (spouse)	27	6	500	50
Stephanie Sophie du Pont Bredin, Minor	1,072			
Margarettta Starrett Bredin, minor	1,057			

LUCILE DU PONT FLINT 8,363 1,125 7,538 6/7 100

Robert Barnett Flint (spouse)	2,572	50	100	
Robert Barnett Flint, Jr. minor	72			40
Peter Hubbard Flint, minor	72			
Alice Lucile Flint, minor	72			
Henry Alexis Flint, "	42			
Constance Evelina Flint, minor	57			

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IREMEE DU PONT, JR. 21,250 1,225 12,600 400

	<u>Delaware</u>	<u>Christiana</u>	<u>U.S.Rubber</u>	
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III. THE FAMILY OF LAMMOT DU PONT

LAMMOT DU PONT	11,870	3,712	2,698	
NATALIE DU PONT EDMONDS	11,700	609 3/8	8,000	390
George Phippen Edmonds (Spouse)		9 3/8	100	678
George Phippen Edmonds, Jr., minor	400	5	750	
Andrew Wilson Edmonds, minor	400	5	750	
MARY DU PONT FAULKNER	12,500	618 3/4	9,000	70
Herbert Kimball Faulkner		5	665	
Elise du Pont Faulkner, minor		5	665	
Emily Morison Faulkner minor		5	665	
Charles Stearns Faulkner, minor		5	665	
Rosemary Faulkner, minor		5	300	
Henry Belin Faulkner, minor		5		
Andrew Gray Faulkner, minor		5	25	
ESTHER DU PONT WEIR	12,500	600	9,707	470
LAMMOT DU PONT, JR.	12,500	618 3/4	8,000	2,103
Lammot du Pont III, minor		5	300	58
William Foster du Pont, minor		5	200	58
PIERRE SAMUEL DU PONT, III	12,500	618 3/4	10,925	870
Pierre Samuel du Pont, IV, minor		10	500	70
Jane de Doliente du Pont, minor		8	400	50
Michele [redacted] du Pont, minor		7	200	50
EDITH DU PONT RIEGEL	12,500	600	11,000	900
Edith du Pont Riegel (Jr.), minor		5	710	200
Richard Eveland Riegel, Jr. minor		5	710	200
John Ely Riegel, minor		5	400	200
Natalie Margaret Riegel, minor		5		200

	<u>Delaware</u>	<u>Christiana</u>	<u>U.S.Rubber</u>	<u>Wilm. Tr. Co.</u>
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III. THE FAMILY OF LAMMOT DU PONT
(Cont'd.)

ALEXANDRINE DU PONT PERKINS COLLIER	12,500	739	13,550	2,482
REYNOLDS DU PONT	12,500	708	22,713	2,360
Katharine Levars du Pont (spouse)		132		400
Katharine du Pont, minor		5		
Reynolds du Pont, Jr., minor		3		
Thomas Levars du Pont, "		1		
DAVID FLETT DU PONT, minor		2,251	24,375	1,721
WILLIS HARRINGTON DU PONT, minor		1,612	18,675	1,354

IV. THE FAMILY OF WILLIAM K. DU PONT
(Deceased)

4 S. HALLOCK DU PONT	26,770		583 1/3 ²	
Virginia Simmons du Pont (spouse)	2,415			
Eve du Pont Remer		9		
S. Hallock du Pont, Jr., minor	1,700			
William Komble du Pont	1,360			
Richard Simmons du Pont, "	1,155			
PAULINA DU PONT DEAN	33,300 ³	300 ³	183 1/3 ²	
Junius Simpson Dean				100
WILHELMINA DU PONT ROSS	33,300 ⁴		183 1/3 ²	1,002 ⁴
Donald Peabody Ross				90

2 Remainder in corpus of trust (life income to others).

3 Held by Nemours Corp., Dean family holding company.

4 Held by Renappi Corp., Ross family holding company.

	<u>Delaware</u>	<u>Christiana</u>	<u>U.S.Rubber</u>	<u>Wilm. Tr. Co.</u>
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V. THE FAMILY OF HENRY B. DU PONT
(Deceased)

HENRY BELIN DU PONT	82,500 ⁵		7,363	1,200
Margaret du Pont Smith	5,833 1/3 ⁵		1,500	150
Henry Belin du Pont III, minor	5,833 1/3 ⁵		1,500	150
Edward Bradford du Pont, "	5,833 1/3 ⁵		1,400	150

VI. THE FAMILY OF MARGARETTA
DU PONT CARPENTER

MARGARETTA DU PONT CARPENTER	80,000	4,000	
LOUISA CARPENTER JENNEY	5,000	393	
IRENE CARPENTER KITCHELL MORGAN	5,000	556	
Renee Kitchell Lickle		17	
Margarettta Lammet Kitchell, minor		16	
Nancy Gardiner Kitchell, minor		18	
Carol Victoria Kitchell, minor		10	
Leslie Halsey Kitchell, minor		10	
ROBERT RULIPH MORGAN CARPENTER, JR.	5,000	447	
Robert Ruliph Morgan Carpenter, III, minor		10	
Mary Kaye Carpenter, minor		10	
Kemble du Pont Carpenter, minor		50	
WILLIAM KIMBLE CARPENTER	5,000	341	
Belle Morgan Carpenter, minor		10	

⁵ Includes remainder in corpus of trust (life income to others).

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<u>Delaware</u>	<u>Christiana</u>	<u>U.S. Rubber</u>	<u>Wilm. Tr. Co.</u>
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VII. THE FAMILY OF LOUISA DU PONT
COPELAND (Deceased)

Lammot du Pont Copeland	76,244 ⁶	96	11,809	550
Pamela Cunningham Copeland (spouse)	4,000	500	300	124
Lammot du Pont Copeland, Jr. minor	6,268 1/3 ⁷	166 2/3 ⁷		
Louisa d'Andelot du Pont Copeland, minor	6,242 1/3 ⁷	166 2/3 ⁷		
Gerret Van Sweringen Copeland, minor	6,245 1/3 ⁷	166 2/3 ⁷		

VIII. THE FAMILY OF MARY DU PONT
LAIRD (Deceased)

MARY BELIN LAIRD DOWNS	20,000	200	1,300 ⁸	1,570 ⁸
WILLIAM WINDER LAIRD, JR.	20,000	200	600 ⁸	1,450 ⁸
ALEETSA LAIRD DOWNS	20,000	200	1,200 ⁸	1,570 ⁸
WILHELMINA LAIRD CRAVEN	20,000	200	1,200 ⁸	1,570 ⁸
ROSA LAIRD HAYWARD	20,000	200	1,300 ⁸	1,570 ⁸

IX. THE FAMILY OF ISABELLA
DU PONT SHARP (Deceased)

HUGH RODNEY SHARP (spouse)		185	
HUGH RODNEY SHARP, JR.	50,000		800
BAYARD SHARP	50,000	100	150

6 On 12-24-48 Lammot du Pont Copeland donated 1,000 shares of Delaware to Longwood Foundation, Inc., a du Pont family non-profit corporation.

7 Includes remainder in corpus of trust (life income to others).

8 Includes stock held by Glanden Land Co., a Laird family holding company. ✓

TOTAL STOCKHOLDERS

	<u>Pelham</u>	<u>Christians</u>	<u>U.S. Rubber</u>	<u>Wilm. Trust Co.</u>
I. PIERRE S. DU PONT		4,792	45,104	1,832
II. FAMILY OF IRENÉE DU PONT	100,000	16,753	100,978	930
III. FAMILY OF LAMMOT DU PONT	100,000	21,096	247,662	17,582
IV. FAMILY OF WILLIAM K. DU PONT (deceased)	100,000	309	950	1,192
V. FAMILY OF HENRY B. DU PONT (Deceased)	100,000	--	11,763	1,650
VI. FAMILY OF MARGARETTEA DU PONT CARPENTER	100,000	5,888	--	--
VII. FAMILY OF LOUISA DU PONT COPELAND (deceased)	99,000	1,096	12,109	674
VIII. FAMILY OF MARY DU PONT LAIRD (deceased)	100,000	1,000	5,600	7,730
IX. FAMILY OF ISABELLA DU PONT SHARP (deceased)	100,000	285	350	--
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	799,000	51,219	324,516	31,590

Source: Information supplied in response to Order on Plaintiff's Motion for Discovery and Production of Documents, dated 9/19/52; Answer of Pierre, Irene, and Lammot du Pont to Interrogatories, dated 10/16/51; Answer of Wilmington Trust Co. to Plaintiff's Interrogatories, dated 9/15/52.

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Government's Exhibit No. 1277

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C O R R E C T I O N

At the end of the third line of the heading, the comma and the word "and" following U. S. Rubber should be stricken, and the words "common, and" should be inserted. The third and fourth lines will then read: "the complaint as amended, in Delaware, Christiana, U. S. Rubber common, and Wilmington Trust Co., as of June 1949."

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THE THREE PROGRESSIVE POSITIONS
IN DU PONT AND GENERAL MOTORS

<u>Pierre S. du Pont</u>	<u>Date</u>	<u>Source</u>
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DU PONT CO.

President	9-8-15 to 5-1-19	Gov't. Ex. 176
Chairman of Board	4-18-19 to 5-30-40	" 176
Director	9-8-15 to date (6-30-49)	Gov't Ex. 176 and Holding Co., Family Answer
Mme., Fin. Comm.	9-8-15 to date (6-30-49)	Gov't. Ex. 176 and Holding Co., Family Answer

GENERAL MOTORS

President	11-30-20 to 5-10-23	Gov't. Ex. 177
Chairman of Board	1915 to 2-7-29	Gov't. Ex. 177 and Holding Co., Family Answer
Director	1915 to 8-7-44	Gov't. Ex. 177 and Holding Co., Family Answer
Mme., Fin. Comm.	1915 to 5-3-37	Gov't. Ex. 177 and Holding Co., Family Answer
Chr. Br. Comm. Mme. "	{ 1-13-21 to 5-10-23 { 1-13-21 to 2-7-29	Gov't. Ex. 177: Gov't. Ex. 177

CHRISTIANA

President	3-1-15 to date (6-30-49)	Gov't. Ex. 1223
Director	3-1-15 to date (6-30-49)	1223

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<u>Irenees du Pont</u>	<u>Date</u>	<u>Source</u>
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DU PONT CO.

Vice President	9-8-15 to 5-1-19	Gov't. Ex. 176
President	5-1-19 to 3-15-26	" 176
Vice-Chm. of Bd.	3-15-26 to 5-20-40	" " 176
Director	9-8-15 to date (6-30-49)	" " 176 and Holding Co., Family Answer
Mm., Fin. Comm.	9-18-15 to 12-31-46	Gov't. Ex. 176
Mm., Fin. Comm.	(9-8-15 to 5-1-19) (9-26-21 to 3-15-26)	Gov't. Ex. 175 " 175

CENTRAL MOTORS

Director	2-21-18 to 9-6-38	Gov't. Ex. 177
Mm., Fin. Comm.	2-21-18 to 3-3-37	" 177

CHRISTIANA

Treasurer	5-19-30 to date (6-30-49)	Gov't. Ex. 1823
Vice President	3-1-15 to 4-3-41	" 1823
Director	3-1-15 to date (6-30-49)	" " 1823

DELAWARE

Treasurer	1-21-30 to 12-24-37	Gov't. Ex. 100
Vice President	1-1-27 to 12-24-37	" " 100
Director	1-1-27 to 12-24-37	" " 100

Record only goes back to 1-1-27.

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<u>Person</u>	<u>Date</u>	<u>Source</u>
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DU PONT CO.

Vice President	3-23-16 to 3-15-36	Gov't. Ex. 176
President	3-15-36 to 5-20-40	" 176
Chairman of Board	5-20-40 to 1-19-48	" 176
Director	9-8-15 to date (6-30-49)	Gov't. Ex. 176 and Holding Co., Family Answer
Mme., Fin. Comm.	10-30-18 to 11-19-45	Gov't. Ex. 174
Mme., Ex. Comm.	9-8-15 to 5-20-40	" 175

GENERAL MOTORS

Chairman of Bd.	2-7-29 to 5-3-37	Gov't. Ex. 177
Director	11-7-18 to 6-3-46	" " 177
Mme., Fin. Comm.	11-7-18 to 5-3-37	" " 177
Mme., Ex. Comm.	2-6-30 to 2-5-31	" 177
Mme., Policy Comm.	5-3-37 to 6-3-46	" " 177

CHRISTIANA

Vice President	3-5-23 to date (6-30-49)	Gov't. Ex. 1223
Director	3-1-15 to date (6-30-49)	" 1223

DELAWARE

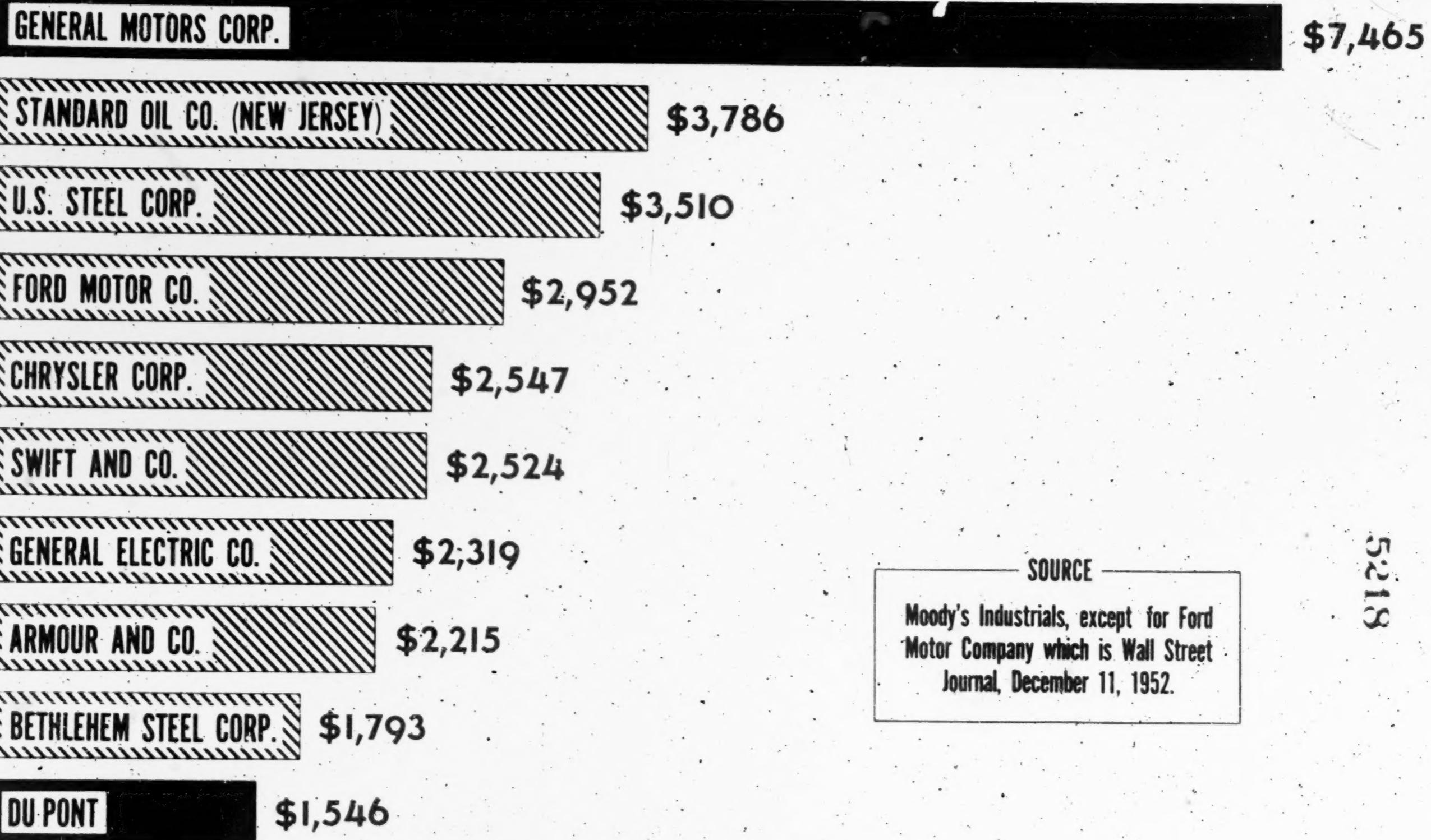
Vice President	1-1-27 to 12-24-37	Gov't. Ex. 100
President	12-24-37 to 2-25-43	" " 100
Director	1-1-27 to 2-13-43	" " 100

* Record only goes back to 1-1-27.



1951 SALES OF TEN INDUSTRIAL MANUFACTURERS

MILLIONS OF DOLLARS



SOURCE

Moody's Industrials, except for Ford
Motor Company which is Wall Street
Journal, December 11, 1952.

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2962

Incerpt from grand jury subpoena duces tecum, dated August 20, 1948, and addressed to General Motors Corporation

* * *

YOU ARE HEREBY COMMANDED that laying aside all and singular your business and excuses you be and appear before the Grand Jury of the DISTRICT COURT OF THE UNITED STATES for the Northern District of Illinois, in Room 450, United States Courthouse, in the City of Chicago, in said District, on the 30th day of September, A. D. 1948, at 10:30 o'clock A.M. of said day, and also that you bring with you and produce at the time and place aforesaid -----

* * *

3. All statistical tables, charts, graphs, tabulations, and summaries, together with books, reports, records, and other documents which show the following information for each year as to the following companies (the responding company to furnish the data for the period starting with January 1 of the year indicated below after such company's name, and to the date of the service of this subpoena):

E. I. duPont de Nemours & Company (1915)
General Motors Corporation (1915)
Bendix Aviation Corporation (1928)
North American Aviation, Inc. (1928)
Ethyl Corporation (1930)
Kinetic Chemicals, Inc. (1930)
U. S. Rubber Company (1927)
Remington Arms Co., Inc. (1931)

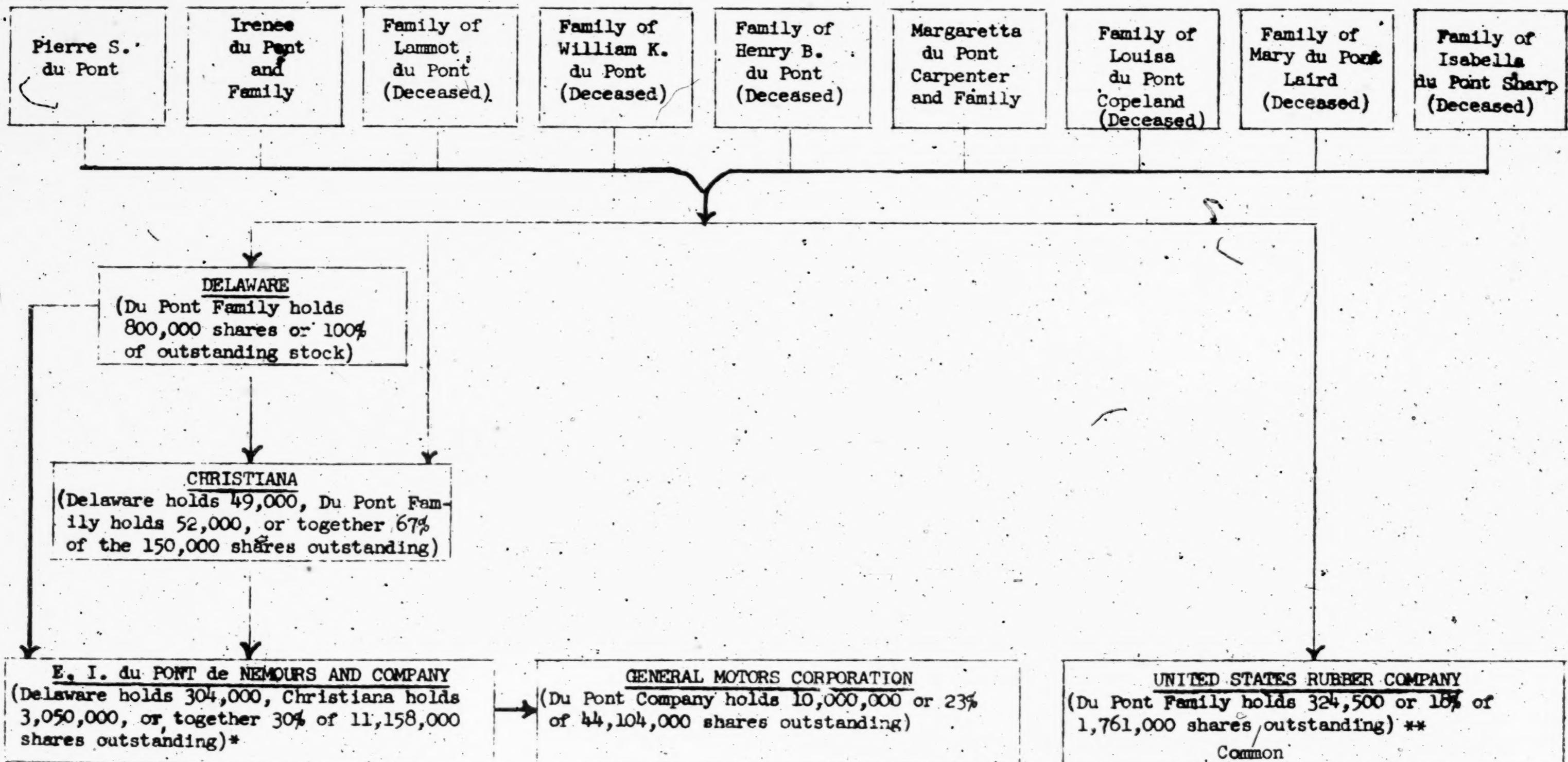
(including all the divisions or departments and subsidiaries of each such company):

- (a) The total annual sales (in dollars) made by your Company and its subsidiaries to each of the above listed companies (other than yours);
- (b) The total annual sales (in dollars) of each of the products sold by your Company and its subsidiaries to each of the above listed companies (other than yours);
- (c) The total annual purchases (in dollars) made by your Company and its subsidiaries from each of the above listed companies (other than yours);

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- (d) The total annual purchases (in dollars) of each of the products purchased by your Company and its subsidiaries from each of the above listed companies (other than yours);
- (e) The total annual purchases (in dollars) of each of the products involved in (d) above, purchased by your Company and its subsidiaries from companies other than those listed above and other than your Company.

STOCK HOLDING RELATIONSHIPS AMONG MEMBERS OF THE DU PONT
FAMILY AND CORPORATE DEFENDANTS AS OF JUNE 1949
(Figures in round numbers)



* Before 4 to 1 stock split of 6-15-49

** Du Pont family also holds 74,630
shares of preferred stock out of
651,000 shares outstanding.

GENERAL MOTORS CORPORATION
DETROIT 2, MICHIGAN

October 27, 1948

Ferris Hurd, Esq.
Hope & Ballard
120 South LaSalle St.
Chicago 3, Illinois

Re: Grand Jury Subpoena No. 9072

Dear Mr. Hurd:

In your letter of September 17, 1948 to Mr. Williams, which established the basis for partial compliance with the subject subpoena on September 30, 1948, it was provided that no return would be made on that date with respect to paragraph 3 of the subpoena "except with respect to existing compilations and summaries." As a result of your previous discussions with Mr. Hotchkiss and Mr. Williams on September 2, 1948, we believed that it was understood that General Motors had no existing compilations and summaries of the type contemplated by paragraph 3 of the subject subpoena.

As you know, it was the absence of any such compilations which led General Motors to have a spot survey or sampling for one month made by sixteen of its operating divisions. Originally we contemplated taking the month of July, 1948, as the last full month prior to the service of the subpoena. Upon investigation, we found that our car divisions were down a week in July because of the shortage of

(2444)

3 131

C

steel. In the limited time available, we could not determine the effect of this shutdown upon the flow of materials into our plants or the effect upon the receipt and payment of invoices. We therefore decided to use the month of June, 1948.

O

At the time of this sampling, inquiry was made as to the existence of any compilations or statistical data which might be of assistance in connection with the proposed sampling or which might be submitted in compliance with the subpoena. We were assured that none were in existence.

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Y

As is the case with many other large corporations having many diversified business activities, General Motors has had no need for any statistical department as the term is commonly used or any other department which would develop the type of data or statistics contemplated by paragraph 3 of the subject subpoena. In view of this, we were satisfied on the basis of our original inquiry that no such compilations or summaries were in existence.

however, in view of Mr. Williams' letter of October 13, 1948, and your discussions with him, we have made further inquiry among those people in the corporation who would know of the existence of any such statistical data. On the basis of these inquiries and our general understanding of the corporation's organization and administration, we can say that to the best of our knowledge and belief General Motors Corporation (including all the divisions or departments and subsidiaries of General Motors Corporation) has no statistical tables, charts, graphs, tabulations and summaries which show the information described in paragraph 3 of the subject subpoena.

Very truly yours,

Anderson

General Counsel



Government's Exhibit No. 1303

C O R R E C T I O N

In United States Rubber Company box in lower right-hand corner, the word "common" should be inserted between the figure and the word "shares" reading: 1,761,000 common shares outstanding.

In United States Rubber Company box in lower right-hand corner, parenthetical explanation - (Du Pont Family holds 324,500 or 18% of 1,761,000 common shares outstanding) - should be followed by two asterisks with the following footnote -

**Du Pont Family also holds 74,630 shares of preferred stock out of 651,000 shares outstanding.

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EXCERPT FROM 1920 ANNUAL REPORT OF
E. I. DU PONT DE NEMOURS & COMPANY, INC., TO STOCKHOLDERS

IV. INVESTMENT SECURITIES

By conversion of General Motors Corporation common stock for Chevrolet Motor Company stock this company has now acquired about two-thirds ownership in the Chevrolet Motor Company, whose assets consist essentially of General Motors Corporation common stock. This conversion resulted in substantially no change in our equities in the General Motors Corporation.

During the latter part of November last, Mr. W. C. Durant, then President of the General Motors Corporation, requested that we take over the management and control of that corporation, advising that he desired to resign and sell his interest in the corporation in order to liquidate his personal indebtedness, which was very large and pressing.

The conditions presented made immediate action imperative and at a time when the financial situation both here and abroad was very acute. Negotiations were conducted by us through the Du Pont American Industries, Inc., which is owned entirely by your company and the Chevrolet Motor Company, in which it owns a controlling interest.

These negotiations resulted as follows:

First - We incorporated the Du Pont Securities Company under the laws of Delaware with a capital consisting of \$7,000,000 8% cumulative voting preferred stock.

100,000 shares no par value non-voting common stock.

Second - The Du Pont Securities Company sold its securities as follows:

\$4,200,000 preferred stock and 36,000 shares common stock to Du Pont American Industries, Inc., for which it paid \$4,200,000.00 in cash and loaned to Du Pont Securities Company 824,179 shares General Motors Corporation common stock.

\$2,800,000 preferred stock and 24,000 shares common stock to Chevrolet Motor Company, for which it paid \$2,800,000 in cash and loaned to Du Pont Securities Company 49,403 shares General Motors Corporation common stock.

50126
The above supplied \$7,000,000 in cash to Du Pont Securities Company and 1,373,632 shares of General Motors Corporation common stock on loan.

Third - The Du Pont Securities Company then sold at par \$20,000,000 one-year 8% collateral trust bonds through Messrs. J.P. Morgan & Company. These bonds are secured by 4,000,000 shares General Motors Corporation common stock which the company acquired as follows:

2,504,273 shares purchased from Mr. W. C. Durant as hereinafter recited.

122,095 shares purchased from Syndicate as hereinafter recited.

824,179 shares loaned by Du Pont American Industries, Inc.

549,453 shares loaned by Chevrolet Motor Company.

4,000,000 shares--Total

Out of a total of 60,000 shares of no par value common stock of the Du Pont Securities Company which the Du Pont and Chevrolet Companies received as above stated, 20,000 shares were paid as a commission to the purchasers of this bond issue which covered the complete cost of financing.

Fourth - The Du Pont Securities Company purchased 2,504,273 shares of General Motors Corporation common stock from Mr. Durant, paying therefor \$23,790,600.40 in cash and 40,000 shares of Du Pont Securities Company common stock of no par value. It also purchased 122,095 shares of General Motors Corporation common stock from a syndicate in which the Du Pont and Chevrolet Companies and Mr. W. C. Durant were interested, paying therefor \$2,163,557.40 in cash, all of which latter stock has since been sold.

Fifth - A few weeks ago the Du Pont American Industries, Inc., purchased from Mr. W. C. Durant his 40,000 shares of common stock of the Du Pont Securities Company, paying him therefor 230,000 shares of General Motors Corporation common stock.

Summarizing the above, the Du Pont Securities Company owns outright upwards of 2,500,000 shares and has borrowed 1,373,632 shares of General Motors Corporation common stock from the Du Pont and Chevrolet Companies. It has outstanding \$20,000,000 of 8% collateral trust bonds due November 22, 1921; \$7,000,000 of 8% cumulative voting preferred stock (\$4,200,000 of which is owned by Du Pont American Industries, Inc., and \$2,800,000 by the Chevrolet Motor Company) and

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100,000 shares no par value non-voting common stock of which 64,000 shares are owned by Du Pont American Industries, Inc., and 16,000 shares by the Chevrolet Motor Company, the remaining 20,000 shares being owned by the underwriters of the bond issue.

* * *

(3) 295 21

5228

Interrogatory No. 1 Propounded by Plaintiff
to General Motors Corporation on December
7, 1951.

1. State for each of the years 1920 to June 30, 1949, inclusive:
 - (a) The total number of shares of voting stock of your company which were then outstanding;
 - (b) The total number of such shares which were voted at each meeting of your stockholders, stating separately also, if the figures are available, the number of such shares which were voted in person and the number of the shares which were voted by proxy;
 - (c) The names of the persons, if any, designated by the management of your company to receive the proxies and vote the stock of your stockholders.

Government's Exhibit No. 1306

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Excerpt from Answer of General Motors Corporation
to Interrogatory No. 1 Propounded by Plaintiff on
December 7, 1951

YEAR	SHARES OF COMMON STOCK			
	ENTITLED TO VOTE	BY PROXY	IN PERSON	
* * *				
1928	17,203,237	11,465,007	4,937	11,469,944
1928	17,166,437	10,859,972	4,917	10,864,880
1929	43,054,263	27,231,068	12,597	27,243,665
1930	42,489,061	26,898,930	5,449	26,904,439
1930	42,632,234	24,143,793	11,865	24,155,658
1930	42,651,041	24,882,821	9,173	24,891,994
1931	43,464,504	26,817,731	11,415	26,829,146
1932	43,257,181	26,337,036	11,194	26,348,140
1933	43,083,180	25,259,317	8,385	25,267,702
1934	42,952,870	23,908,465	9,186	23,917,651
1934	42,957,167	29,950,830	8,877	29,959,707
1935	42,890,470	24,229,009	8,334	24,237,343
1936	42,913,685	NOT AVAILABLE		23,310,647
1937	42,622,921	25,595,496	904	25,596,400
1938	42,744,191	25,216,027	2,499	25,218,526
1939	43,125,896	25,990,085	3,273	25,993,358
1940	42,931,118	27,285,134	2,119	27,287,303
1941	43,149,682	28,314,194	6,316	28,320,510
1942	43,254,016	27,771,618	15,655	27,787,273
1943	43,336,029	26,225,693	15,524	26,241,219
1944	44,001,134	29,635,264	15,878	29,651,142
1945	43,999,126	29,184,207	16,674	29,200,881
1946	44,021,769	30,250,016	18,503	30,268,519
1947	44,075,690	31,565,576	331	31,565,907
1948	44,012,652	32,246,574	384	32,247,058
1949	42,988,717	33,370,950	1,024	33,371,974

**DU PONT STOCK AT GENERAL MOTORS
STOCKHOLDERS MEETINGS**

Dec. 31	No. of Shares of General Motors Common Stock Enti- tled to be Voted by Du Pont Corp. ¹	Shares of Common Stock of General Motors Entitled to Vote at Stock- holders Meetings ¹	Total Shares of Common Stock Repre- sented by Person or Proxy at General Motors Stock- holders Meetings ²	\$ of Du-Pont-Voted Shares of GM Common to Total Shares of GM Common Repre- sented at GM Stock- holders Meetings
1928	5,679,388	17,166,437	10,864,889	52.3
1929	14,199,970	43,054,263	27,243,665	52.1
1930	13,766,151	42,489,061	26,904,439	51.1
1931	13,743,020	43,464,504	26,829,146	51.2
1932	13,473,768	43,257,181	26,348,140	51.1
1933	12,558,371	43,083,180	25,267,702	49.7
1934	12,204,302	42,957,167	29,959,707	41.0
1935	12,036,779	42,890,470	24,237,343	49.6
1936	11,967,241	42,913,685	23,310,647	51.3
1937	11,910,837	42,622,921	25,596,400	46.5
1938	10,000,000	42,744,191	25,218,526	39.6
1939	10,000,000	43,125,836	25,993,358	38.4
1940	10,000,000	42,931,118	27,237,303	36.6
1941	10,000,000	43,149,632	28,320,510	35.3
1942	10,000,000	43,254,016	27,787,273	35.9
1943	10,000,000	43,336,029	26,241,219	38.1
1944	10,000,000	44,001,134	29,651,142	33.7
1945	10,000,000	43,099,126	29,200,881	34.2
1946	10,000,000	44,021,769	30,268,519	33.0
1947	10,000,000	44,075,690	31,565,907	31.6
1948	10,000,000	44,012,652	32,247,058	31.0
1949	10,000,000	43,988,717	33,371,974	29.9

¹ Source: Annual Reports of DuPont Corporation to its stockholders. This figure includes General Motors common stock held directly by DuPont Corporation and by General Motors Securities Corporation, the stock of which was initially owned 70% by DuPont Corporation and later the common stock of which was owned 100% by DuPont Corporation.

² Source: Answers dated February 1, 1952 of General Motors Corporation to plaintiff's interrogatories.

NOTE: This table does not purport to consider the holdings of Pierre S. du Pont, Ira du Pont, Irene du Pont, and Christiana Securities Company in common stock of General Motors.

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Excerpt from Annual Report of Du Pont Corporation
to its Stockholders for the Year 1938 (Page 22)

~~GENERAL MOTORS INVESTMENT~~

Your company's investment in common stock of General Motors Corporation totals 10,000,000 shares. Prior to December 29, 1938, 156,250 of these shares were owned directly, and 9,843,750 shares were owned indirectly through General Motors Securities Company. On that date your company surrendered to General Motors Securities Company its entire holdings of General Motors Securities Company common stock, receiving in exchange the 9,843,750 shares of General Motors Corporation common stock (plus a small amount of cash), with the result that the 10,000,000 shares are now directly held by your company. These shares constitute 22.99 per cent of the issued common stock of General Motors Corporation and are equivalent to approximately 9/10ths of a share for each share of the common stock of your company outstanding at the end of the year.

The change from indirect to direct ownership of the bulk of your company's investment in General Motors Corporation common stock will result in saving the Federal income tax on dividends from General Motors Corporation common stock which General Motors Securities Company heretofore was obliged to pay. The change also terminates your company's voting power with respect to about 1,800,000 shares of General Motors Corporation common stock owned by General Motors Securities Company but applicable to the Class "A" stock of that company, none of which was owned by your company.

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**SUMMARY OF DIRECTORSHIPS AND OTHER OFFICIAL
POSITIONS HELD BY INDIVIDUAL DEFENDANTS AND
CERTAIN OTHER INDIVIDUALS IN
DEFENDANT CORPORATIONS**

ALLEN, WILLIAM P. (Deceased)

Du Pont	- Director, 1927-1941 Vice-President, 1928-1931 Executive Committee, 1928-1929
U. S. Rubber	- Director, 1937-1939 1936-1940

BARKSDALE, H. M. (Deceased)

Du Pont	- Director, 1916-1918 Finance Committee, 1916-1918 Vice-President, 1915-1918
General Motors	- Director, June to November 1918 Finance Committee, June to November 1918
Wilmington	- Director, 1912-1919

BROWN, DONALDSON

Du Pont	- Director, 1918 to date Finance Committee, 1920 to date Executive Committee, 1918-1921
General Motors	- Director, 1920-1946 Vice-Chairman, 1937-1946 Vice-President, 1920-1942 Financial Policy Committee, 1946 to date Administration Committee, 1942-1945 Policy Committee, 1937-1946 Executive Committee, 1924-1937 Finance Committee, 1921-1937 (Chairman, 1929-1937)
Vilmington	- Director, 1918-1921

BROWN, H. FLETCHER

1934

- Christiana - Director, 1935-1944
 Vice-President, 1935-1944
- Du Pont - Director, 1915-1944
 Finance Committee, 1919-1921
 Executive Committee, 1915-1919 and 1921-1930

CARPENTER, R. R., M. (Deceased)

Member of the Du Pont Family

- Christiana - Director, 1915-1949
- Delaware - Director, 1927 to Aug. 1943 and June 1944 to 1945
 President, 1943
- Du Pont - Director, 1915 to date
 Finance Committee, 1919-1921
 Executive Committee, 1915-1919 and 1925-1931

CARPENTER, W. E., Jr.

- Christiana - Director, 1948 to date
- Du Pont - Director, 1919 to date
 Chairman, January 1943 to date
 President, 1940 to January 1948
 Finance Committee, 1921 to date
 Executive Committee, 1919 to January 1948
- General Motors - Director, 1927 to date
 Financial Policy Committee, 1946 to date
 Policy Committee, 1937-1946
 Finance Committee, 1927-1937
- Wilmington - Director, 1921 to date

COPELAND, CHARLES

Member of the Du Pont Family

- Delaware - Director, 1927-1937
 President, 1927-1937
- Du Pont - Director, 1921-1942
- U. S. Rubber Syndicate Member
- Wilmington - Director, 1926-1934

COPELAND, LAMMOT DU PONT

Member of the Du Pont Family
 Christiana - Director, 1940 to date
 Vice-President, 1944 to date
 Delaware - Director, 1937 to date
 Du Pont - Director, 1942 to date
 Finance Committee, 1943 to date
 General Motors - Director, 1944 to date
 U. S. Rubber Syndicate Member
 U. S. Rubber - Director, ~~1941-1945~~ 1940-1946
 Wilmington - Director, 1943 to date

DU PONT, PIERRE S.

Christiana - Director, 1915 to date
 President, 1915 to date
 Du Pont - Director, 1915 to date
 Chairman, 1919-1940
 President, 1915-1919
 Finance Committee, 1915 to date
 General Motors - Director, 1917-1944
 Chairman, 1917-1929
 Executive Committee, 1921-~~1923~~ 1929
 Finance Committee, 1917-1937
 U. S. Rubber Syndicate Member
 Wilmington - Director, 1903-1920 and 1924 to date
 Vice-President, 1903-1935
 Honorary Chairman, 1935 to date

DU PONT, IRENÉE

Christiana - Vice-President, 1915-1941
 Director, 1915 to date
 Delaware - Director, 1927-1937
 Du Pont - Director 1915 to date
 President, 1919-1926
 Finance Committee, 1915-1946
 Executive Committee, 1915-1919 and 1921-1926
 General Motors - Director, 1918-1938
 Finance Committee, 1918-1937
 U. S. Rubber Syndicate Member
 Wilmington - Director, 1919-1932

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DU PONT, LAMOT (Deceased)

Christiana - Vice-President, 1923 to date
Director, 1915 to date
Delaware - Director, 1927-1943
President, 1937-1943
Du Pont - Director, 1915 to date
Chairman, 1940 to January 1948
President, 1926-1940
Finance Committee, 1913-1945
Executive Committee, 1915-1940
General Motors - Director, 1918-1946
Chairman, 1929-1937
Policy Committee, 1937-1946
Executive Committee, 1930-1934
Finance Committee, 1918-1937
U. S. Rubber Syndicate Member
Wilmington - Director, 1917 to date

DU PONT, H. P.

Du Pont - Director, 1915 to date
Finance Committee, 1916-1943
General Motors - Director, 1918-1944
Finance Committee, 1918-1937
U. S. Rubber Syndicate Member
Wilmington - 1919 to date

DU PONT, HENRY BELIN

Member of the Du Pont Family
Christiana - Director, 1928-1934; 1941 to date
Secretary, 1929-1934
Vice-President, 1944 to date
Delaware - President, 1943 to date
Director, 1927-1934 and 1939 to date
Du Pont - Director, 1934 to date
General Motors - Director, 1938-date
U. S. Rubber Syndicate Member
Wilmington - Director, 1927-1934 and 1937 to date

DU PONT, LAMOT, JR.

Member of the Du Pont Family
Wilmington - Assistant Secretary, 1937-1942 and 1946 to Jan. 1947
Assistant Treasurer, January 1947 to date

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DU PONT, PIERRE S., III

Member of the Du Pont Family
 Delaware - Director, 1943 to date

DU PONT, S. HALLOCK

Member of the Du Pont Family
 Delaware - 1927 to date, Director

DARDEN, COLGATE, Jr.

Member of the Du Pont Family
 U. S. Rubber - Director, 1947-1948

DAVIS, F. B., Jr.

Du Pont - Director, 1927-1942
 U. S. Rubber - Director, 1929-1948
 Chairman, 1929-1948
 President, 1929-1942

DAVIS, HENRY

Personal Secretary to Irène du Pont
 Christiansen - Assistant Secretary, 1938 to date
 Assistant Treasurer, 1938 to date 1937 to date
 Vice-President, 1920-1921
 U. S. Rubber Syndicate Member
 U. S. Rubber - Director, 1928-1948

DEAN, J. SIMPSON

Member of the Du Pont Family
 Wilmington - Director, 1931-1943 and 1946 to date

ECHOLS, ANDUS B.

Du Pont - Director, 1927 to date
 Finance Committee, 1929 to date
 General Motors - Director, 1944 to date
 Financial Policy Committee, 1947 to date
 Wilmington - Director, 1926-1934

EDMONDS, GEORGE P.

Member of the Du Pont Family
U. S. Rubber - Director, 1944-1947 1948
Wilmington - Director, 1943 to date
President, 1948 to the present time

GREGGAWALT, CRAWFORD H.

Member of the Du Pont Family
Christiana - Director, 1944 to date
Du Pont - Director, 1942 to date
President, January 1948 to the present time
Finance Committee, January 1948 to date

HUMPHREYS, H. E., JR.

Christiana - Secretary, 1934-1938
Assistant Secretary, 1930-1935
Delaware - Secretary, 1934-1938
U. S. Rubber - Director, 1938-1948
Vice-President, 1938-1948
President at the present time

HARRINGTON, W. F.

Du Pont - Director, 1927 to date
Wilmington - Director, 1931-1934 and 1939 to date

HASKELL, J. A. (Deceased)

Du Pont - Director, 1915 to 1923
Vice-President, 1915-1923
General Motors - Director, 1917-1923
Vice-President, 1918-1923
Executive Committee, 1918-1923
Finance Committee, 1918-1923

LAIRD, W. W., Jr. (Deceased)

Member of the Du Pont Family
Delaware - Director, 1927
U. S. Rubber Syndicate Member
Wilmington - Director, 1910-1927

LAIRD, W. W., Jr.

Member of the Du Pont Family
 Delaware - Director, 1934 to date

MAY, ERNEST E.

Member of the Du Pont Family
 Delaware - Director, 1937 to date

PRATT, JOHN L.

General Motors - Director, 1923 to date
 Vice-President, 1922-1937
 Financial Policy Committee, 1946 to date
 Executive Committee, 1924-1937
 U. S. Rubber - Director, 1937-~~1942~~ 1942

RASKOB, J. J. (Deceased)

Christiana - Director, 1915 to date
 Du Pont - Director, 1915-1946
 Finance Committee, 1915-1944
 Executive Committee, 1915-1918
 General Motors - Director, 1917-1946
 Vice-President, 1918-1929
 Executive Committee, 1921-1928
 Finance Committee, 1917 to August 1928 and
 May 1929 to 1937
 Wilmington - Director, 1909-1918

SHARP, H. R.

Member of the Du Pont Family
 Christiana - ~~1915-1916~~ Vice-President, 1915-1916
 Delaware - 1927 to February 1942 and November 1942 to 1946, Director

SHARP, H. R., Jr.

Member of the Du Pont Family
 Delaware - Director, February 1942 to November 1942 and
 1946 to date

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SLOAN, ALFRED P., JR.

Du Pont - Director, 1923 to date
General Motors - Director, 1918 to date
Chairman, 1937 to date
President, 1923-1937
Financial Policy Committee, 1946 to date
Administration Committee, 1937 to 1945
Policy Committee, 1937-1946
Executive Committee, 1918 to 1937
Finance Committee, 1922-1937

TALLMAN, FRANK G. (Deceased)

Du Port - Director, 1916-1938
Wilmington - Director, 1929-1934, and 1936-1938

Note: Tenure in offices indicated above, unless otherwise noted, begin and end during the years set out without reference to the month of the year in which they began or ended. Where the month of the year during which tenure begins or ends is indicated, it has been supplied because of a break in continuity of the tenure. Where the tenure is indicated as beginning in a specified year and running "to date," the "to date" shall mean in the case of:

Christiana - June 30, 1949.
Delaware - April 25, 1949
Du Port: Directors - August 23, 1948
Members of Committees - November 15, 1948
Officers - August 23, 1948
General Motors - December 6, 1948
U. S. Rubber - August 20, 1948
Wilmington - June 1949

Sources: Government Trial Exhibits Nos. 100, 174, 175, 176, 177,
919, 999, 1000, 1223, and 1276
Moody's Manual of Investments 1952

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C O R R E C T I O N S

Page 1, William P. Allen, dates as Director of U. S. Rubber
should be 1936-1940 instead of 1937-1939.

Page 2, H. Fletcher Brown, date as Director of Christiana
should be 1934-1944 instead of 1935-1944.

Page 3, Lammet du Pont Copeland, date as Director of U. S.
Rubber should be 1940-1946 instead of 1941-1946.

Page 3, Pierre S. du Pont, date as member of Executive Committee
of General Motors should be 1921-1929 instead of 1921-1923.

Page 4, Henry Belin du Pont, as Director of Christiana,
1940 to date should be shown in addition to 1928-1934.

Page 5, Colgate Darden, Jr., date as Director of U. S. Rubber
should be 1946-1948 instead of 1947-1948.

Page 5, Henry Davis, date as Assistant Treasurer of Christiana
should be 1937 to date instead of 1938 to date.

Page 6, George P. Edmonds, date as Director of U. S. Rubber
should be 1944-1948 instead of 1944-1947.

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GOVT. TRIAL EX. NO. 1309

C O R R E C T I O N S

Page 7, John L. Pratt, date as Director of U. S. Rubber
should be 1937-1942 instead of 1937-1941.

Page 7, H. R. Sharp, the date 1915-1916 opposite Christiana
should be preceded by the words "Vice-President,"

Govt. Trial Ex. No. 1312

AN AGREEMENT, dated the 23rd day of June, 1920, by
and between

J. P. MORGAN & CO. (hereinafter called the "Man-
agers") parties of the first part; and

THE SUBSCRIBERS HERETO (hereinafter called,
severally, the "Participants" and collectively the "Syndi-
cate"), severally, parties of the second part.

WHEREAS, The said J. P. Morgan & Co. have under-
written the subscription for 1,419,856 shares of the stock
of General Motors Corporation offered to the common stock-
holders of said Corporation as set forth in the circular
letter of its Secretary dated June 2, 1920, and have organ-
ized a Group to provide any and all sums required to en-
able them to perform their said underwriting obligation;
and

WHEREAS, Certain of the stockholders of the said
General Motors Corporation desire to form a Syndicate
upon the terms of this agreement in which Syndicate the
said J. P. Morgan & Co., in behalf of the said Group are to
be included, to buy and sell common stock of the General
Motors Corporation, including the stock outstanding and
the stock issuable pursuant to the said subscription offer
to its stockholders, and also to buy and sell the subscription
warrants issued to the stockholders pursuant to such offer
and the receipts issued for partial payments on account
of any such subscriptions; and

WHEREAS, Heretofore and on and after May 29, 1920,
the said J. P. Morgan & Co. have made purchases and sales
of such stock and of such stockholders' subscription rights
and warrants, and in consideration for the agreements of
the Participants hereunder,

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and for the purpose of availing of the advantages thereof for the benefit of the said Group, are to vest in the Syndicate under this agreement the said transactions heretofore conducted by them and the proceeds thereof; and

WHEREAS, The said J. P. Morgan & Co. are to act as Managers of the Syndicate under this agreement without compensation for their services as such:

NOW THEREFORE, in consideration of the premises and of the mutual promises herein contained, the parties hereto mutually have agreed and hereby do agree as follows:

FIRST. On subscribing this agreement, each Participant shall indicate opposite his name the amount for which such Participant is or shall be bound as his participation in the Syndicate. For and on account of such amount so indicated as his several participation, each Participant agrees to make payment to the Managers, from time to time, or at any time on or after this date when and as called for by the Managers, by payment in cash or by delivery of shares of common stock of the General Motors Corporation at the rate of \$20 per share. The term "common stock of the General Motors Corporation" refers to any of such stock now or hereafter outstanding.

SECOND. The several Participants shall be called upon to make such payments in respect to their several participations only ratably according to the several amounts thereof; but to the full extent of his several undertaking, each Participant shall be so responsible, regardless of performance or nonperformance by any other

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Participant.

In the same proportion, each Participant shall share in the benefits and shall bear any loss resulting to the Syndicate under this agreement; but nothing herein contained shall constitute the parties hereto partners, or shall render any one of the Participants liable to contribute more than the amount of his several participation.

THIRD. The parties hereto of the first part, as Managers of the Group aforesaid and otherwise, hereby assign and transfer to the Syndicate, and the Syndicate hereby assumes, the said dealings conducted since May 29, 1920 by the parties of the first part in common stock of the General Motors Corporation and in stockholders' subscription rights and warrants in respect of such stock; such dealings being set forth on the books of the parties of the first part and the results of such dealings having been communicated to the Participants.

FOURTH. The objects of the Syndicate are to buy, sell, deal in and deal with common stock of the General Motors Corporation now or hereafter issued, and subscription warrants and subscription receipts for such common stock, and to protect the value of such stock, warrants and receipts for the benefit and in the interests of the Participants respectively, including the Group hereinabove referred to. The Managers are to have entire charge and sole direction of all transactions of the Syndicate under this agreement, and full and unrestricted power and authority with respect thereto. Without limitation of such general powers, the Managers, for and on account of the Syndicate, may buy, sell, deal in and deal with any common stock of the General Motors Cor-

open market or otherwise, in such amounts and at such prices and at such time or times as the Managers may deem advisable, whether before or after the issue of any of such stock or receipts, including sales to employees of the said Corporation at prices less than the market prices but not less than cost, if deemed in the interest of the Syndicate; may complete, for account of the Syndicate, any such transactions heretofore negotiated or arranged for; may exercise subscription rights and may make payment of amounts due on subscription warrants and receipts, when acquired; may borrow money and as security therefor pledge any and all such stock or warrants or receipts acquired or held for account of the Syndicate, and may incur for account of the Syndicate any and all expenses deemed by the Managers to be necessary or advisable in carrying out, or in endeavoring to carry out, the transactions in this agreement contemplated or in doing anything deemed by the Managers to be in the interest of the Syndicate. Any and all expenses heretofore or hereafter incurred by the Managers in connection with any such matters are to be borne ratably by the Syndicate, and are to be deducted from the assets of the Syndicate prior to final distribution. Any and all moneys received by the Managers for account of the Syndicate may be held by the Managers as bankers in general account. The Managers also shall have power and authority finally to fix and to pay all compensations of depositaries, brokers, agents, counsel or others, and

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in the expense account may include such commissions to brokers and others (whether or not members of the Syndicate) as compensation for services rendered, as from time to time the Managers may determine and may have paid or have become obligated to pay.

FIFTH. The net profits or losses of the Syndicate shall be shared by the Participants in proportion to their participations as above stated, and all of the obligations of the Participants hereunder are several and not joint. No death of any individual member or of any partner in any partnership member, and no dissolution or termination of any corporate member, shall dissolve the Syndicate or terminate the rights or powers of the Managers in respect of any such member, or on account thereof shall entitle any surviving member, or the representative of any member then deceased or ceasing to exist, to demand any dissolution, distribution or accounting. All rights and powers of the Managers shall vest in the co-partnership or firm doing business under the name of J. P. Morgan & Co. as from time to time constituted.

SIXTH. The rights and powers of the Managers and the interests of the Participants hereunder, severally and respectively, shall continue until the final distribution hereunder. No Participant shall be entitled before the termination of the Syndicate to receive any of the assets of the Syndicate, subject to this agreement. The Managers shall be the sole and final judges as to whether at any time it is in the interest of the Syndicate to proceed further under this agreement, and whenever they may deem expedient they may abandon the objects contemplated by this agreement and any and all further pro-

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ceedings hereunder. Unless otherwise determined by the Managers in the exercise of their unrestricted discretion, the Syndicate transactions shall be terminated December 15, 1920. As soon as may be after the termination of the Syndicate, the Participants shall be entitled ratably to receive the assets of the Syndicate then held by the Managers,

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after the deduction of any and all expenses and liabilities incurred by the Managers for any purpose of this agreement.

SEVENTH. The managers shall not be liable under any of the provisions of this agreement nor for any matter therewith connected, except for good faith in performing, or in refraining from performing or carrying out, the obligations by them herein expressly assumed. It is understood that in the same manner as other Participants, the parties of the first part, as Managers of the Group hereinabove mentioned, shall become Participants in the Syndicate hereunder with the same rights and benefits as any other Participant.

EIGHTH. This agreement shall bind, and is for the benefit of, the parties hereto and their successors, executors and administrators, severally and respectively. Nothing herein contained shall be construed as creating any trust or obligation whatsoever in favor of any person or corporation other than the Managers and the Participants, nor any obligation in favor of the Participants excepting only as is herein expressly provided. Each Participant shall set opposite his signature hereunder an address, to which notices, calls or other communications may be sent, and any notice, call or other communication addressed to any Participant at the address so given, and either left at such address or

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mailed thereto, shall be deemed actually given to such Participant, and shall be sufficient for all the purposes hereof.

NINTH. In consideration of the irrevocable rights in them vested hereunder, and the promises of the several Participants the parties of the first part have been as

parties to and in good faith will endeavor to consummate the purposes of this agreement. The Managers shall not be liable for the act or acts of any other person nor for anything but their own general and wilful misconduct.

TENTH. This agreement shall become operative and be binding on the parties when and as soon as Participants shall have subscribed this agreement in respect of Participations for an aggregate amount not less than \$10,000,000. The Managers may at any time and from time to time admit additional Participants in the Syndicate and increase the aggregate amount of the participations; provided, however, that nothing herein contained is intended or shall be deemed to authorize the Managers to increase or decrease the amount of the participation specified by any participant in his subscription hereto. Any additional Participants so admitted shall have the same ratable rights and obligations under this agreement as he would have if he were an original member of the Syndicate.

IN WITNESS WHEREOF, One counterpart of this agreement has been signed by the parties of the first part, and upon several other counterparts the parties of the second part at various dates subscribed their names and the amounts of their several participations, respectively, it being understood that for convenience this agreement may be

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may be so signed in several counterparts with like force and effect as though all signatures were upon one part thereof.

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NAME	ADDRESS	AMOUNT OF PARTICIPATION
J. Morgan Spartan Mfg.	23 Wall St	13, - or 1000 ⁺
Ogallala	Oshawa, Ont.	500,000
Warren & Vaux	Portland Calif	500,000
G. C. Durand	New York	1,000,000
Aeroflage	New York	500,000
Walter H. Smith	everywhere	500,000 "
E. Edwards	Dayton	500,000 =
F. Kettering	Dayton	500,000
T. H. Warner Co.	Muncie	500,000 in stock
Chevrolet Motor Co		
By G. C. Durand	N.Y.	2,000,000
Prest.		
E. I. du Pont de Nemours & Co.	Wilmington, Del	\$1,000,000
Hubert and Florence Dalton	Orchard Park, N.Y.	800,000 ⁺

NOTE: Check marks appear after first, second, third and fifth lines of hand-written portion.

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THIS MEMORANDUM OF AGREEMENT, made and entered into this 30th day of April, A. D. 1926, by and between MEXICAN RESEARCH LABORATORIES, INC., a corporation duly organized and existing under, and by virtue of the laws of the State of Colorado, hereinafter called the "Research Company", and ETHYL GASOLINE CORPORATION, a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, herein after called the "Ethyl Company".

WITNESSETH:

THAT WHEREAS, the Research Company represents that it is the owner of a secret process for the manufacture of tetraethyl of lead, for which it is about to make application for letters patent of the United States; and

WHEREAS, said Ethyl Company desires to purchase, to the extent hereinafter stated, tetraethyl of lead manufactured by said Research Company under said secret process;

NOW, THEREFORE, For and in consideration of the premises and mutual covenants and agreements hereinafter contained, by the parties hereto to be respectively kept and performed, it is mutually understood and agreed as follows:

FIRST: Said Research Company agrees to make application for letters patent of the United States upon its said secret process within thirty (30) days from the date of this agreement, and to prosecute the same with reasonable diligence to a conclusion. If application for patent shall not be made within said period of thirty (30) days, then said Research Company agrees to authorize the Ethyl Company to apply for a patent in the name of the Research Company. And said Research Company further agrees that it shall deliver its said process forthwith to its attorney or some other escrow holder; and in the event that said patent shall not be applied for as in this paragraph provided, said process shall be turned over to the Ethyl Company so that patent may

be applied for as herein provided, in the name of the Research Company.

*Info
by Euro
A.M.
by just*

SECOND: If upon the application for said patent a search shows that the process so claimed and owned by the Research Company has been anticipated in any prior patent or patents or in applications pending, then this contract shall be terminated as to both of the parties hereto and each party relieved from any obligation or liabilities hereunder.

The opinion of Melville Church, of the law firm of Church & Church, or of J. W. Morrison of said firm, shall be conclusive as to anticipation, and said opinion as to anticipation and notice to said Research Company shall be given within forty (40) days after the filing of the applications for patent and the furnishing of a copy thereof to said Morrison; and in the event that said opinion as to patent shall be to the effect that the process of the Research Company has not been anticipated, then delivery of the product as provided in this agreement shall begin within ninety (90) days after the receipt of said notice.

THIRD: After the date when delivery of the product is to begin said Research Company agrees to manufacture and load for shipment on cars, in accordance with shipping instructions received from the Ethyl Company, tetraethyl of lead of a purity equal to that now contracted to be supplied said Ethyl Company by The E. I. Du Pont de Nemours Company, said tetraethyl of lead to be supplied at the rate of 17,500 pounds per month, in fairly equal daily deliveries of 675 pounds per day, said tetraethyl of lead to be delivered U. S. S. Denver in drums to be furnished by the Ethyl Company; or its representatives, which said drums, at the option of the Ethyl Company, may contain the constituents necessary to make up ethyl fluid when said tetraethyl of lead shall have been added thereto. If said drums are supplied partly filled as herein provided, the Research Company agrees to add to said drums the necessary quantity of tetraethyl of lead, and after the

contents of the drum have been mixed, said Research Company agrees to agitate thoroughly said contents after being mixed and before shipment. The Research Company agrees to be responsible for such drums while in its possession. Said Research Company further agrees that each batch shipped shall be numbered serially and tested, and the tests (and a test sample if requested) forwarded to the Ethyl Company; and impurities, if any, shall be reported to the Research Company and claim made therefor by the Ethyl Company within a reasonable time; provided that, at its option, the Ethyl Company shall have the right to inspect at the plant of the Research Company. All the things in this contract agreed to be done by the Research Company shall be done at its expense and is included in the sale price hereinafter set forth.

FOURTH: It is further mutually understood and agreed that all manufacture and handling of said tetraethyl of lead shall be carried on in accordance with the existing rules and regulations promulgated from time to time by the Surgeon General of the United States Public Health Service for the manufacture and handling of tetraethyl of lead and ethyl fluid and in accord with any local rules and regulations, state or municipal, relating thereto.

FIFTH: It is mutually understood and agreed that in the manufacture and mixing of said tetraethyl of lead, the chief medical adviser of the Ethyl Company, or one of his assistants, shall have the right at any and all reasonable times to examine anyone in the employ of said Research Company, who, in the opinion of said medical adviser, may be exposed to hazard in the manufacture, mixing or handling of tetraethyl of lead or ethyl fluid, said examination to take place both before such employment and at such times thereafter as may be determined upon by said chief medical adviser; and it is mutually understood and agreed that no one shall be put to work, or continued upon work in said manufacture of tetraethyl of lead or ethyl fluid who refuses to be examined or who fails to meet the physical requirements laid down by the examiner, contrary to the advice of said chief medical adviser. Such examination shall be carried on at the expense of said Ethyl Company, but said Ethyl Company; or its chief medical adviser shall

be under no further legal liability or duty of whatever kind on account of such examination. Said Research Company further agrees to follow such reasonable recommendations and suggestions as may be made from time to time by said chief medical officer of the Ethyl Company, in the manufacture of said product.

SIXTH: It is mutually understood and agreed that said obligation of the Research Company to furnish 17,500 pounds of tetraethyl of lead per month to the Ethyl Company shall continue for eight months after the date when delivery shall commence under this agreement; provided, however, that any time during said period of eight months provided for manufacture and delivery of the product, the Ethyl Company shall have the right, at its option, to terminate said contract upon giving thirty (30) days notice of its intention so to do. And in consideration of said option to terminate this contract, it is mutually agreed that said Ethyl Company shall pay to the Research Company Ten Thousand Dollars (\$10,000.00) if said contract shall be canceled, as in this paragraph provided, prior to the delivery of one-fourth of the total amount of product contracted for said eight months period; Seventy Five Hundred Dollars (\$7500.00) if said contract shall be canceled between the time when one fourth and one half of the total amount of product shall have been delivered; Six Thousand Dollars (\$6,000.00) if said cancellation shall occur between the time when one half and three fourths of the product shall have been delivered, and Five Thousand Dollars (\$5,000.00) if canceled at any time between the delivery of three fourths and the entire amount contracted for, which sums shall be in full satisfaction and liquidated damages to said Research Company on account of said cancellation.

SEVENTH: It is further, mutually understood and agreed that upon sixty (60) days written notice from the Ethyl Company to the Research Company, the amount of product shall be increased to 1,350 pounds per day, at the same price per pound of product, and with the same right in said Ethyl Company to cancel the contract upon thirty (30) days notice; provided, however, that if

such cancellation shall take place prior to the expiration of said first eight months of this agreement, after delivery has commenced, that it shall pay the sum of Five Thousand Dollars (\$5000.00) in addition to the payments specified in paragraph Sixth hereof, in consideration of the right to exercise said option, and in full satisfaction and liquidated damages to said Research Company on account of said cancellation.

EIGHTH: It is mutually understood and agreed that in case of delays in delivery or in accepting delivery of said product which are caused by circumstances unavoidable or outside the control of either party hereto, or unavoidable delay in shipment, that such delays shall not cause a cancellation of said contract, but delivery of material hereby contracted for may be partially or wholly suspended, as the case may be, during the continuance of such interruption, and the contract shall be extended for the period of such delays, and delivery shall be continued at the specified rate and no liability shall be incurred by either party for damages resulting from such suspension of shipments; provided that the party asking for such delay shall use its best efforts to remove all difficulties causing the delay, and provided further that such delay shall not continue beyond a period of sixty (60) days, in which case the contract may be canceled, at the option of the other party.

NINTH: It is mutually understood that said Research Company shall sell and said Ethyl Company shall buy said tetraethyl of lead at a price of ninety cents (90¢) per pound, F.O.B. Denver, during the first eight months after delivery has commenced; and that said Ethyl Company agrees to make payment for all of the product (tetraethyl of lead) delivered F.O.B. Denver, by said Research Company, on or before the 15th day of each and every month during which this agreement shall be in force and effect, said Research Company rendering its statement therefor on the first day of the month.

TENTH: It is further mutually understood and agreed that said Ethyl Company shall have the right and option, upon written notice delivered to said Research Company thirty (30) days prior to the expiration of said eight months' period after the date when delivery begins under this contract, to elect to continue this contract and require deliveries from said Research Company, as hereinafter provided, upon the same terms and conditions as hereinabove set forth for said eight months period, except as hereinafter modified; provided that said Research Company, within fifteen (15) days after receipt of said notice, may elect not to continue manufacture and delivery under the terms hereof, and in such case written notice so stating its election not to continue delivery to said Ethyl Company shall excuse said Research Company from any further manufacture and sale under this contract, but such written notice from the Research Company shall automatically cancel this contract and grant to said Ethyl Company, or whomsoever it may designate, a license, not exclusive, to use the process so patented, or for which patent is applied, and manufacture tetraethyl or lead thereunder for the life of the patent. In such case said Ethyl Company agrees to pay to said Research Company a license fee or royalty of two (2¢) cents per pound upon the first five hundred thousand pounds, one and one-half (1½¢) cents per pound upon the second five hundred thousand pounds, and at the rate of one (1¢) cent per pound thereafter, for all tetraethyl or lead so manufactured and produced under said license by it or its designee.

ELEVENTH: Said Ethyl Company shall have the further right and option to require said Research Company to manufacture and produce in additional production units of six hundred seventy-five (675) pounds, thirteen hundred fifty (1,350) pounds, and or twenty-seven hundred (2700) pounds each per day, any amount in excess of six hundred seventy-five (675) pounds per day, up to and including six thousand seven hundred fifty (6750) pounds per day, and sell the same to the Ethyl Company at a price not to exceed

ninety (90¢) cents per pound of product, and at such price less than ninety (90¢) per pound of product as will meet competition, upon condition that said Ethyl Company shall give the Research Company sixty (60) days' written notice for each 675 pound unit and ninety (90) days' written notice for each 1350 pound or 2700 pound units per day so required, which period shall not overlap; provided that said Research Company shall have the right to elect not to meet the price of competition upon thirty (30) days' written notice, in which event said Ethyl Company, or its nominee, shall have a license, not exclusive, to manufacture under said process upon payment of the same royalty as provided in paragraph Tenth hereof.

TWELFTH: It is mutually understood and agreed that in the event said Research Company shall breach this contract and shall fail to remedy said breach within fifteen (15) days after receipt of written notice from said Ethyl Company to remedy said breach, that said Ethyl Company shall have the right and option to terminate this contract and be relieved from any liability to make any of the payments provided herein in the event of cancellation, and it or its nominee may then manufacture as a licensee, not exclusive, under said process, without the payment of any royalty; provided, however, that if said Ethyl Company shall exercise said option, that said right and license to manufacture under said process, as set forth herein, shall be in full satisfaction and as liquidated damages to said Ethyl Company on account of failure to perform by said Research Company.

THIRTEENTH: It is further mutually understood and agreed that at all times said Ethyl Company shall have the right to cancel this contract upon delivery of sixty (60) days' written notice to said Research Company; provided that in consideration of such right of cancellation said Ethyl Company shall pay to said Research Company, on account of units other than as provided in paragraphs Sixth and Seventh hereof, as follows:

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Seventy-five Hundred (\$7,500.00) Dollars for each six hundred seventy-five (675) pound unit installed within one year next prior to the date of cancellation;

Ten Thousand (\$10,000.00) Dollars for each thirteen hundred and fifty (1,350) pound unit installed within one year next prior to the date of cancellation;

Seventeen Thousand Five Hundred (\$17,500.00) Dollars for each twenty-seven hundred (2,700) pound unit installed within one year next prior to the date of cancellation.

Said amounts so to be paid shall be decreased fifteen (15%) per cent, for each additional year or fraction thereof for which any of said units shall have been installed and operated by said Research Company.

Said amounts so paid as aforesaid shall be in full satisfaction and liquidated damages for any and all losses caused said Research Company by reason of cancellation by the Ethyl Company.

FOURTEENTH: In the event that the Ethyl Company shall exercise its option to require further deliveries of tetraethyl or lead after said initial period of eight (8) months, as hereinabove provided, then if satisfactory arrangements cannot be made as to blending of the product by the Research Company in order to make ethyl fluid, the Research Company agrees to deliver the tetraethyl or lead product, as provided in paragraph Third hereof, or at the option of the Ethyl Company F. O. B. cars, or to the local blending plant of the Ethyl Company, if one should be built in the locality of the Research Company's plant, and in case of such delivery, the Ethyl Company agrees to supply containers or drums for said product.

FIFTEENTH: Said Research Company agrees to protect and save said Ethyl Company harmless from claims of infringement of letters patent by others than the parties hereto on account of the manufacture of tetraethyl or lead, as provided in this agreement, upon notice to said Research Company so to do.

SIXTEENTH: Wherever notice is stipulated to be given in this contract by one party to the other, such notice shall be considered as delivered to the other party in due course of mail when the same shall be deposited in the mail with proper stamps affixed and registered, with the registry fee prepaid, and addressed to

the other party at its last known post office address.

SEVENTEENTH: In the event that this contract shall be continued as is provided in paragraph Tenth hereof, then it shall continue for a period of ten (10) years, subject to the rights of cancellation of the Ethyl Company as herein provided, and shall be binding upon the respective successors and assigns of the parties hereto.

IN WITNESS WHEREOF, each of the parties hereto has caused its corporate name to be subscribed by its President, and its corporate seal attached hereto and attested by its Secretary the day and year first above written.

AMERICAN RESEARCH LABORATORIES, INC.,

(S E A L)

By

D. K. Huff
President

Attest:

T. B. Krueger
Secretary.

ETHYL GASOLINE CORPORATION,

(S E A L)

By

E. Webb
President

Attest:

M. J. Proffitt
Secretary.

We, the undersigned, D. K. Proffitt and J. G. Sharon, of the City and County of Denver, State of Colorado, have read the attached and foregoing contract, and assent and agree thereto, as the inventors of the process for the manufacture of tetraethyl of lead therein referred to, which process we have sold and assigned to American Research Laboratories, Inc., a Colorado corporation.

IN WITNESS WHEREOF, We have attached our hands and seals, at Denver, Colorado, this day of April, A. D. 1926.

D. K. Proffitt (SEAL)

J. G. Sharon (SEAL)

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In consideration of the execution of the attached and foregoing contract and the sum of One (\$1.00) Dollar to us in hand paid, by Ethyl Gasoline Corporation, a Delaware corporation, the receipt whereof is hereby acknowledged, we, the undersigned, T. B. Huff and J. N. Huff, holders of the majority of the stock of American Research Laboratories, Inc., and officers and directors thereof, being desirous that American Research Laboratories, Inc., should make the foregoing contract, do hereby guarantee, promise and agree to and with said Ethyl Gasoline Corporation, that the above named American Research Laboratories, Inc., will well and faithfully perform and fulfill everything by the foregoing agreement on its part and behalf to be performed and fulfilled, at the times and in the manner provided.

J. N. Huff
T. B. Huff

Answer of E. I. du Pont de Nemours and Company,
Filed March 7, 1952, to Interrogatory 7(a) and 7(b)

7. During the years 1946 and 1947 E. I. Du Pont de Nemours and Company produced and sold no Tetrastyl Lead or lead antiknock compounds to others than the Ethyl Corporation.

For the years 1948 through 1950 the data requested are as follows:

- (a) See Exhibit 1 attached hereto.
- (b) To the best of our knowledge, all companies listed in the response to question 7(a) except those listed below had been customers of Ethyl Corporation prior to the time that E. I. du Pont de Nemours and Company commenced selling Tetrastyl Lead or lead anti-knock compounds:

Absorption Plant Inc.
American Republics Corporation
Atlas Processing Company
California Company
California Refining Company
Canadian Industries, Ltd.
Carthage Corporation
Carthage Hydrocall Inc.
Gilcrease Oil Company
How-Kola Refining Corporation
Eli Lilly & Company
Port Fuel Company, Inc.
Rosewood Oil & Refining Company
Salt Lake Refining Company
Southwest Gas Producing Company, Inc.
Western States Refining Company
Wimberly Refining Company

Exhibit I

ANSWER TO QUESTION 7(a) OF INTERROGATORIES
OF NOVEMBER 5, 1951

Company	1948 Sales		1949 Sales		1950 Sales	
	Thousands	\$	Thousands	\$	Thousands	\$
Absorption Plant, Inc.	152 560		53 502		-	
Aquila S. A. Technico Industriale	-		-		-	
American Liberty Oil Company	293 147		101 530		253 331	
American Mineral Spirits Company	190 740		60 612		153 360	
American Oil Company	7 099		2 215		7 103	
American Republics Corporation	-		-		114 530	
Arizona Fuel Oil Company	152 660		49 992		191 200	
Ashland Oil & Refining Company	-		-		2 187 940	
Asiatic Petroleum Corporation	-		-		4 369 919	
Associated Ethyl Company, Ltd.	-		-		-	
Atlantic Refining Company	996 980		350 609		2 611 680	
Atlas Processing Company	-		-		-	
Aurea Gasoline Company	114 700		41 679		727 308.2	
Boltytin Petroleum Company, Ltd.	-		-		4 880 999	
The Bay Petroleum Corporation	419 340		135 960		650 630	
Bell Oil & Gas Company	38 240		13 895		153 140	
Ben Franklin Refining Company	-		-		329 640	
Big-Bill Refining Corporation	36 873		12 750		34 087	
California Company	-		-		238 619	
California Refining Company	617 608		201 686		931 200	
					326 798	
					1 489 980	
						513 567

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Company	1948 Sales		1949 Sales		1950 Sales	
	Pounds ^a	\$	Pounds ^a	\$	Pounds ^a	\$
California Texas Oil Company, Ltd.	-	-	15.9	\$3	-	-
Canadian Industries Ltd.	-	-	-	-	1 757 763	\$74 805
Carter Oil Company	96 516	\$1 958	-	-	-	-
Carthage Corporation	-	-	307 144.2	107 298	-	-
Carthage Hydrocall Inc.	-	-	-	-	5	11
Chicago Corporation	612 340	203 111	844 060	298 366	76 460	26 042
Clafferty Gasoline Company	290 976	96 244	272 629	100 092	442 984	156 188
Comitato Italiano Petrali	671 447	209 469	-	-	-	-
Cooperative Refinery Assoc.	191 000	66 496	369 973.6	131 611	-	-
Conoco Petroleum Corporation	648 320	211 755	573 780	202 421	916 440	316 077
Crown Central Petroleum Corporation	-	-	230 062.1	80 801	928 640	316 534
Dairy Oil Company	-	-	152 840	54 894	114 830	39 431
Deutsche Ruhrgas U. Petroleum Gas, Gm	-	-	-	-	157 571	53 724
Deutsche Shell A. G.	-	-	-	-	157 628	53 688
Deutsche Vacuum Oil A. G.	-	-	-	-	157 612	53 724
Eastern States Petroleum Company, Inc.	1 379 180	479 135	1 382 100	487 422	1 303 680	444 639
East Deutsche Amerikanische Petroleum Gm	-	-	-	-	157 606	53 681
East Standard Oil Company	14 359 295.2	4 741 873	13 150 644.4	4 751 805	17 344 966	6 025 830
Frontier Refining Company	249 140	75 504	173 206.3	53 305	190 900	65 322
General Petroleum Corporation	3 225 600	1 050 075	4 223 780	1 490 430	5 061 060	1 743 725

<u>Company</u>	<u>1948 Sales</u>		<u>1949 Sales</u>		<u>1950 Sales</u>	
	<u>Pounds*</u>	<u>\$</u>	<u>Pounds*</u>	<u>\$</u>	<u>Pounds*</u>	<u>\$</u>
Gilcrease Oil Company	36 420	12 987	38 060	14 795	-	-
Globe Oil & Refining Company	-	-	-	-	459 040	158 784
Governatorato Della Citta Del Vaticano	-	-	-	-	4 261	1 451
Gulf Oil Corporation	-	-	3 498 447	1 361 168	3 117 697	1 183 094
Hou-Kola Refining Corporation	5 680	2 108	5 660	2 023	-	-
Huber, J. M., Corporation	-	-	76 480	29 730	-	-
Humble Oil & Refining Company	7 226 719	2 378 023	7 039 312	2 513 580	7 810 158	2 731 945
H. L. Hunt	-	-	102 242	36 733	68 138	23 736
Hunt Oil Company	73 805	26 455	110 705	40 606	161 733	63 896
Husky Refining Company	38 280	11 645	-	-	-	-
Imperial Oil Limited	3 980 440	1 311 680	4 338 600	1 527 652	4 175 364	1 426 304
Industrial Raffinazioni Olii Minerali	-	-	-	-	32 647	11 120
Jugosalta	-	-	-	-	115 009	39 475
Kerr-McGee Oil Industries Inc.	-	-	38 220	13 320	114 700	39 670
Eli Lilly & Company	-	-	-	-	240	147
Lago Oil & Transport Company, Ltd.	1 253 712	476 625	3 984 000	1 473 871	5 200 803	1 860 359
Magnolia Petroleum Company	2 146 340	741 047	3 964 520	1 405 060	6 637 141	2 312 006
McBride Refining Company	-	-	-	-	178 904	62 729
McCarthy Chemical Company	-	-	612 740	215 616	571 600	196 798
McColl-Frontenac Oil Company, Ltd.	687 514.7	226 295	1 035 146.3	359 758	1 063 938	363 214
McMurtry Refining Company	-	-	-	-	152 740	52 633
Mexican Petroleum Corp. of Georgia	31 218	9 739	51 131	18 468	-	-
Midland Cooperative Wholesale	38 080	12 872	153 280	34 001	76 380	26 015
National Cooperative Refinery Association	76 460	27 783	229 880	79 908	457 560	157 801
Northwestern Refining Company	-	2.1	25 570	8 961	59 631	20 974

<u>Company</u>	<u>1948 Sales</u>		<u>1949 Sales</u>		<u>1950 Sales</u>	
	Pounds*	\$	Pounds*	\$	Pounds*	\$
Hornbeck Company, Inc.	-	-	204 023	73 771	204 506	71 508
Pan American Refining Corporation	1 156 140	375 532	3 062 334	1 403 670	5 547 860	1 924 081
Pana Refining Co., Division of Illinois Farm Supply	-	-	76 880	27 140	76 250	26 590
Petroe Corporation	-	-	229 500	79 793	305 660	105 321
Petroleum Specialties, Inc.	51 114	18 369	89 494	33 154	127 138	44 893
Phillips Petroleum Company	253 240	100 466	2 617 365.2	1 008 279	163 580	64 381
Pontiac Refining Corporation	612 040	203 027	1 040 360	368 213	1 212 925	425 176
Port Fuel Company, Inc.	-	-	-	-	76 580	26 083
Pure Oil Company	2 756 784.2	915 744	3 767 780.8	1 321 161	5 677 056	1 953 871
Radio Refining Company	36 140	12 892	38 220	13 557	76 460	26 042
Rafinaria Nacional de Petroleo, S. A.	-	-	-	-	66 744	22 733
Republic Oil Refining Company	-	-	-	-	76 240	27 186
Richfield Oil Corporation	1 302 760	475 627	2 658 740	956 115	2 284 960	801 999
Roosevelt Oil & Refining Corporation	-	-	-	-	114 580	39 086
Rosewood Oil & Refining Company	38 260	11 639	-	-	-	-
Rothschild Oil Company	-	-	147 681	55 103	73 801	26 298
Salt Lake Refining Company	76 624.2	27 849	997 326.3	348 013	919 661	315 682
Shamrock Oil & Gas Corporation	343 100	112 769	574 020	202 747	495 363	169 651
Shell Oil Company	10 147 938.1	3 344 584	12 799 901.8	4 562 821	15 915 633	5 551 348
Shell Oil Company of Canada Ltd.	574 100	194 721	804 860	261 790	267 940	91 865

5264

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<u>Company</u>	<u>1948 Sales</u>		<u>1949 Sales</u>		<u>1950 Sales</u>	
	<u>Pounds*</u>	<u>\$</u>	<u>Pounds*</u>	<u>\$</u>	<u>Pounds*</u>	<u>\$</u>
sinclair Refining Company	-	-	-	-	1 919 122	727 589
Skelly Oil Company	-	-	612 412.1	215 320	535 101	163 171
Societade Anonima Concessionaria da Refinacao	-	-	-	-	181 962	48 806
Sociedad-Vacuum Oil Company (Ultramar)	-	-	-	-	72 419	24 666
Sociedad-Vacuum Oil Company	5 650 454	1 870 835	7 198 947	2 512 634	7 259 769	2 508 404
Sohio Petroleum Company	-	-	-	-	38 100	12 977
Southwest Gas Producing Company, Inc.	-	-	230 230	80 946	458 704	159 277
Southwestern Oil & Refining Company	152 920	49 106	115 060	43 204	919 680	317 413
Standard Oil Co. of California	6 920 545	2 277 890	6 677 036	2 443 617	6 736 576	2 468 727
Standard Oil Co. (Ind.)	-	-	-	-	1 064 137	404 509
Standard Oil Co. of Texas	67 791	23 373	67 779	26 363	183 737	65 848
Standard Oil Development Company	298	330	-	-	462 777	166 360
Standard-Vacuum Oil Company	-	-	-	-	-	-
Standard-Vacuum Petroleum Company, NLJ (N.V.)	-	-	496 933	177 613	-	-
Stanolind Oil & Gas Company	-	-	306 604.2	106 441	996 324	344 659

* Pounds of antiknock compound, the form in which du Pont sells its tetraethyl lead.

2688

Company	1948 Sales		1949 Sales		1950 Sales	
	Pounds*	\$	Pounds*	\$	Pounds*	\$
Sun Oil Company	84 260	33 420	-	-	1 569 886	510 519
Taylor Refining Company	306 540	103 072	154 060	51 388	619 960	144 249
Texaco Company	10 720 326.5	3 591 734	14 480 973.4	5 024 635	14 425 153	4 983 515
Union Oil Company of California	8 611 291	2 760 134	8 359 429.1	2 948 093	5 753 011	1 996 820
United Gas Pipe Line Company	191 760	66 766	460 200	160 089	76 600	26 765
United States Government	-	-	62	101	26	43
Utah Oil Refining Company	196 540	65 289	386 960	136 422	431 000	132 576
Venezuela Gulf Oil Company	-	-	13.3	19	263 928	96 702
Warren Petroleum Corporation	38 160	13 666	38 240	13 105	-	-
Weccan Oil & Gas Company	-	-	204 487	73 838	272 588	96 038
Western States Refining Company	-	-	94 092	12 652	68 154	24 010
Winniboro Refining Company	113 533	37 338	28 361	10 533	-	-
Total	90 723 621	330 074 304	134 121 395.2	446 072 662	153 781 298	513 407 929

* Pounds of antiknock compound, the form in which du Pont sells its tetraethyl lead.

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2989

FABRICS ROUTINE TRADE

PORT - Sales Manager's Copy

Customer Fisher Body Div., General Motors Corp.
 St and No. General Motors Bldg.
 City - Zone Detroit 2
 County - State Wayne - Michigan
 Persons Interviewed Fred Walker, Vern Fisher, etc.

RESULTS OF CALL

1. Business Condition (a) Capacity now operating 70 %
 (b) Outlook next quarter - Good Fair Poor
2. Competition (a) List competitive items purchased since last report.
 Did you secure samples? (b) Have we lost business to competition since last report?
 (c) What new competitive products are affecting our market?
3. Du Pont - Report any conditions re: quality, service, price, credit or policy that affect our relationship with this firm (a) to our benefit (b) Adversely.
4. Sales - What is being done to improve our sales volume here?

(Number your answers to questions 2, 3 and 4)

2. (a) Purchasing pyroxylin and vinyl materials from Textileather and Federal Leather, in addition to ourselves. Competitive samples have been sent in from time to time, as available.
 (b) In general have a policy of purchasing from more than one source. At present they have three, in line with long-standing policy and practice. We are securing a reasonably large percentage of the business.
 (c) All sources have been doing work on various vinyl constructions. Some tests have been run on a convertible top material made of vinyl film in which a low count fabric is embedded. A test top performed very well in service in this vicinity but they were not at all satisfied with the result of continuous aging in Florida.
3. (a) and (b). Everything running along smoothly now that the top material situation has been straightened out.
4. Frequent contacts and follow-up.

B.C. 23
 Class 1
 Report No. 59
 Salesman T. A. Nalle
 Date of Call 4/27/48

Received for Typing 4/27/48
 Date Type L 4/27/48

COPIES TO:

- | | |
|---------|---------|
| 1. Nbg. | 5. TJB |
| 2. FA | 6. Fld. |
| 3. ALB | 7. |
| 4. TAN | 8. |

ACTION NEEDED

Show Separately for Newburgh and Fairfield

5. List all samples and literature to be forwarded.
6. What other service is desired for this firm ~~prior to~~ next call?
7. When will customer next be in market 4/30/48? Should office follow up with customer - Yes No
8. List any changes in consumption or mailing list data that should be made in the Master Trade Report.

(Number your answers to questions 5, 6 and 8)

5. None.
6. None.
8. None.

REMARKS

Have been running along at a fairly even rate, requiring from us approximately 165,000 yards of coated fabric per month. However, the coal strike is bound to cause some considerable loss in production which will be reflected in reduced schedules later on. The extent of this is not yet definitely known.

Three "Fabrilite" items, namely 6961, 4502 and 706 qualities in a red Spanish, have been adopted for the Oldsmobile station wagon which will be built at the Fisher Cleveland plant.

The change-over in 4502 quality from "Fabrikoid" to "Fabrilite" is moving along; and is expected to be completed by April 19.

OCG
OCG
OCG

5268

EXCERPTS—

July 24, 1925

To: EXECUTIVE COMMITTEE

FROM: PAINT, LACQUER & CHEMICALS DEPARTMENT

MONTHLY REPORT—JUNE, 1925—PAINT,
LACQUER & CHEMICALS DEPARTMENT

July 20, 1925

Fairfield's June billings show an increase of 60% over May and 10% over forecast. This is principally due to the Chevrolet contract, which was supposed to cover July, August and September, but under which a considerable volume of releases was given us in June.

For the first six months of 1925, our Fairfield sales were 27% lower than for the first half of 1924. This was due entirely to our lack of the Chevrolet and Buick business over the first half of this year. This, it will be recalled, we had the opportunity of taking at competitive prices, but refused to book on an unprofitable basis. Against the loss of volume and consequent impairment of current profits resulting from this refusal, we feel there is a substantial offset in the form of a somewhat improved general tone of the market in which we must operate.

Last Half?

(2991 E)

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Excerpt from Report of Fabrikoid Division to
Executive Committee, for January, 1927, dated
February 23, 1927.

"Many of our competitors show a tendency toward cutting prices. We attribute this condition to the fact that they are generally short of a fair volume of business to operate on. During the month we lost Chrysler's teal business to the Haartz Auto Fabric Company. The latter's prices are within three cents of our bare factory cost. An initial order has been received from the American Motor Body Corporation for wide deck material. Their business was formerly enjoyed by the J. C. Haartz Company."

2992

525(1)

EXCERPTS FROM THE MONTHLY REPORT OF THE
CELLULOSE PRODUCTS DEPARTMENT TO THE
EXECUTIVE COMMITTEE FOR MAY 1923, DATED
JULY 2, 1923.

* * * * *

Chevrolet has placed orders with us for their September requirements of 150,000 yards of Fabrikoid and 276,000 yards of Rubber. Buick's September requirements total 46,500 yards of Fabrikoid and 128,000 yards of Rubber. Orders for Oakland's September needs have also been placed with us, and prices have been quoted Cadillac on Rubber.

* * * * *

Profits:-

The Fairfield net profit of \$8,000 in May is after absorbing a loss of \$15,000 on the \$112,362 of May sales to Chevrolet. These sales amounted to 31-1/2% of Fairfield's total business. Our profit on the remaining 68-1/2% was \$23,000, which figures a little better than 10% net on sales. This is encouraging. The Executive Committee is familiar with the circumstances surrounding the low price at which the Chevrolet rubber business was booked over the first half of 1923. It is estimated that one-third of Fairfield's June sales will be to Chevrolet, which will again net a loss on that account of approximately \$17,500. Fortunately the July/August business has been booked at prices 20% higher. For the last four months of 1923 Chevrolet decided to place only 75% of their business with DuPont and 25% elsewhere. We have had their business 100% up to and including September 1923. The business for the last four months was booked at 54¢, which nets 52.92¢ after deducting cash discount.

Excerpt from Industrial Sales Trade Report
Re Call on Packard Electric Co., Dated 10/20/32.

- PURPOSE OF CALL - 1) Follow up on X-62-7 clear
2) Discuss X-62-8 Black
3) Find out regarding competitive conditions on L. T. Dope.

RESULTS - 1 - X-62-7 did not show up well on either the 175° heat test or 285° test. It pinholed on both tests, due I believe to fact that there were minute bubbles in the film before testing.

2 - In view of the apparently great improvement in X-62-8 black I am dropping X-62-7 at least for present, until we try out a clear of type of X-62-8.

3 - It is reported that Arco has cut price on 13-1/2% film scrap solution to \$.56 or \$.57. If so would we be interested in meeting this figure? I am going to quote Nye \$.60 next week.

4 - PRODUCTION - They are operating much better now as shown by orders for total of 25 drums of our black during past 30 days. Aside from low automotive production the reason for low taking of black all summer was that Packard had a stock of two million feet of black when G-M took them over, from which they shipped all summer. Large stocks are not necessary now as they get the benefit of G-M forecast. We are getting all of the Black H.T. business and have had all of it this year except for 25 drums bought from Arco last March to apply on their unfilled order of July 1931. Although the Arco black now shows much better heat resistance than 6249 the latter is still the only approved black because former does not meet cold test of 4" bend at 0°F.

Ed Rumpler tells me that he frequently has to put an extra 4 coats of 6249 on now. Stated that he had not reported this to Marshall, figuring to work out of the difficulty. He mentioned this on last call but at that time we decided it was probably due to hard wipers caused by not using them. Altho new soft wipers have been installed the trouble continues. If our solids have been ok on recent shipments, it looks as though the trouble is due to too low viscosity in the pans which might be caused by any one of following -

- 1 - Loss in viscosity of 6249 during transit or after manufacture.

5272

2 - Different evaporation conditions in their
pans.. I will investigate this.

ACTION REQUESTED - Please investigate record samples of
the three last shipments made prior to 10/17.

Ed thinks the condition can be improved by cutting
the grease content more and may order "1/2 grease content"
on next order. Please refer to our records for formula
put through that way last year.

Chicago, Ill. December 15, 1932

Salesman's Name H.P. FisherCustomer Packard Electric Corp.Address Warren, OhioDuPont Sales 1932 (9 mon.) \$ 7862DuPont Sales 1931 \$ 24285

Total estimated value of material to be used in 1933

A—Finishing materials that will be used in 1933 (Include every item)

P. X. PRODUCTS

Product	Supplier	DuPont Gal.	Competitor Gal.	Price	Pls.
Blk. H.T.	Arco dup	6000	6000	1.85 old. drs.	
Clear H.T. P-S Co.		2500	1.90		
U.V. lac	Arco dup}	9000	9000	.56	
Thinner	dup	500		.50	
"	Arco		1000	.49	

P. & V. PRODUCTS

Product	Supplier	DuPont Gal.	Competitor Gal.	Price	Pls.
Asphalt	Brydum	1000		.40	drs.

B—What is your forecast of business we will receive from this concern in 1933?

This should represent the value of the Products to be supplied by DuPont in 1933 as shown above.

P. X. Products \$ 16,100

P & V Products \$

TOTAL \$ 16,100

C. Finishing schedules for each article manufactured.

1. Type of metal.
2. Cleaning method.
3. Method of application; spray, brush, dip, or roller coat.
4. How is article finished; give number of coats, reduction, drying or baking time and temperature.

Article H.T. Cable

1

2

3 Special wiper

4 14 coats dried

An average of 8 min.

between coats at 1200

to 1600.

Article L.T. Cable

1

2

3 Special wiper

4 4 coats dried average

of 8 min. between coats
at 1500.

D. If customer is not using our materials 100% answer the following.

1. If price give details.
2. If product answer the following.
 - a: What products have we submitted for trial and what was the reaction?
 - b: If we have not already offered materials, what standard products should we offer?
 - c: If special product is necessary in what respect should it differ from our nearest standard product?
 - d: What qualities is the customer most interested in?

Item Black H.T. Lac.

1. Now using 100% but attitude of Telco very indicates they will release against old Arco order dated July, 1931, as soon as approval is given. Unfilled balance on said order is 120 drums.

2-b

2-c

2-d

23
25
26
27

~~Line~~ Class H. T.

2-a 621 and 3 special I developments would not stand
1000 heat test.

2-b 1-62-19 no sign of order gets down to point where we can
secure business. Unfilled balance is around 70 drums.

2-c

2-d

Item-Pile Scrap Solution

1 So finally set Arco price of 564. clc. in Warren on 13 $\frac{1}{2}$
gal. Mr. Pyle of Dulco-Ramy is as far unwilling to take this away
from us at same price. Will not push so long as we get all
the black which is more profitable.

2-b

2-c

2-d

Item-Aphalt Varnish

1

2-a R-1217. For report on 5 gal. trial

2-b

2-c

2-d

E-What is your plan of solicitation for this account? Include in
your plan any special type of service it is necessary for us to
render in order to acquire this account. Be complete.

Work closely with the Engineers at Warren on new
developments on H.T. Cable. Packard so far has not
used any of the new High Heat Resistant Inc. in
production because it does not meet the cold test
although Arco is very close. Our lab. should bend
every effort to modify ours to meet this.

F-Are there any reasons why this account will not buy from dupont?

No

G-When in your opinion, should we be able to obtain this business?

Should continue to get bulk of the profitable
items.

H-What items if any, should be removed from your potential and
why?

None

I-If this was a selected account in 1932 what progress has been
made as a result of concentrated effort during the past year?

Obtained 138 drums out of 163 drums of Black H.T.
used during 1932.

J-Add any remarks that are pertinent and necessary to enable us
to successfully plan how to obtain this business.

2997

WILMINGTON P & P SALES RECORD COPY CC: R.C. Williams
 INDUSTRIAL SALES TRADE REPORT T.T. Taylor
 E. I. DU PONT DE NEMOURS & COMPANY, Inc.

Finishes Division

Salesman W.P. Fisher

Date 4-24-35

109

Report No.

1

Customer Packard Elect. Company

Class No.

Street and No. None

Business

Auto Cable

Town Warren

State

Ohio

Person Interviewed W.S. Johnstone

Title

Buyer

Title

Product Used	Normal Purchaser	Grade	Price	Pkgs.	F.O.B.	FROM WHOM	Approximate Consumption Next 12 Mos.	In Market Again
SOLVENTS	R.E. FRY							
	Thomas							
SOLUTIONS	Passerman							
LACQUERS								
THINNERS								
BR. LIQUIDS								
PX ENAMEL								
PX PRIMERS & UNDERCOATERS								
BR. POWDER								
READY MIXED								
VARNISHES								
PASTE PAINTS								
OIL ENAMELS								
PV PRIMERS & UNDERCOATERS								
SYN. ENAMELS								
SYNTHETIC UNDERCOATS	D3							
BLACK JAPANS	55							
MAINTENANCE	BB							

- 1 Give information relative to competitive activities:
 (a) Why does customer or prospect buy from competitors (quality, service and price, etc.)?
 b Additional competitive information:
- 2 (a) At what percentage of capacity is customer or prospect operating?
 (b) What is their business outlook?
- 3 List names and titles of persons to receive mailings.

REPORTS ON CALLS MUST BE RENDERED ON BASIS OF:

- (a) PURPOSE OF CALL
- (b) RESULTS OF CALL
- (c) ACTION NEEDED

Rec'd 4-26 typed 4-29-35 AW

A) General solicitation.

B) Varnish.

V-1424 is apparently going to be O.K. for cable when reduced, as well as for harnesses.

Black High Tension

Sample coated with X-600-452 by our Lab. aged 5 weeks stood a $\frac{1}{2}$ " bond after one hour at 300 deg. F. and 3 pieces out of 4 stood the cold test so it appears that product will be O.K. for heat and cold. They have been operating the drum of this product since Monday and the report is that it builds well and does not stick on the reels. The only objection is that the film appears to be softer than the A & W in that it shows the print of the braid from being wound on the reels much more than the A & W. This is illustrated by a length of each cable which I will send Parlim and Chicago. The A & W material is the one with the trade mark. I am not certain as to whether this will rule it out as yet. Due to the importance of getting a product for the new ovens I am not asking for a revision yet, even though X-600-452 may not be quite right.

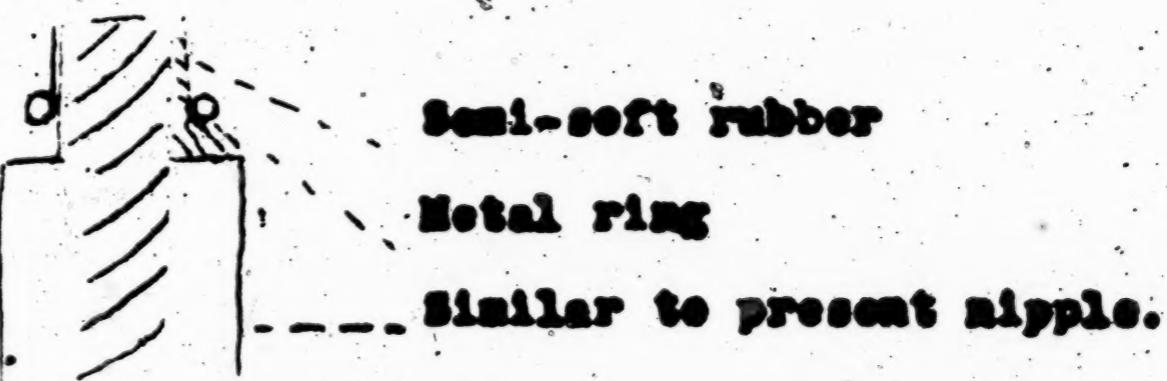
Material for trial in new oven.

It appears that the ovens will be ready for test by next Wed. 5/1. The first concern offering a

(over)

| 5276

suitable material will get the business. They are saving enough X-600-452 to try but it appears likely that this will be too thin for the new wipers. They are going to use nipples which are supposed to be duplicates of those used by Belden. See sketch. It is packards opinion that a viscosity of about twice the present one will be needed.



C) It is very important that we submit something very soon for the new equipment.

(2999 E)

WILMINGTON P & P SALES RECORD COPY CC: T.T. Taylor
 INDUSTRIAL SALES TRADE REPORT R.C. Williams
 E. I. DU PONT DE NEMOURS & COMPANY, Inc.

Finishes Division

Salesman W. S. Robertson Date 6-17-36 Report No. 136
 Customer Packard Electric Company Class No. 1
 Street and No. Dana St. Business Inc. Cables
 Town Warren State Ohio
 Person Interviewed J.B. Litman Eng. E.I. DeBolt P.A.
 Title Buyer Buyer Title

Products Used	Normal Purchases	Grade	Price	Per	F.O.B.	FROM WHOM	Approximate Consumption Next 12 Mos.	In Market Again
SOLVENTS					Supp.			
SOLUTIONS								
LACQUERS								
THINNERS								
BR. LIQUIDS								
PX ENAMEL								
PX PRIMERS & UNDERCOATERS								
BR. POWDER								
READY MIXED								
VARNISHES								
PASTE PAINTS								
OIL ENAMELS								
PV PRIMERS & UNDERCOATERS								
SYN. ENAMELS								
SYNTHETIC UNDERCOATS								
BLACK JAPANS								
MAINTENANCE								

- 1 Give information relative to competitive activities:
 (a) Why does customer or prospect buy from competitors (quality, service and price, etc.)?
 (b) Additional competitive information:
- 2 (a) At what percentage of capacity is customer or prospect operating?
 (b) What is their business outlook?
- 3 List names and titles of persons to receive mailings.

REPORTS ON CALLS MUST BE RENDERED ON BASIS OF:

- (a) PURPOSE OF CALL
- (b) RESULTS OF CALL
- (c) ACTION NEEDED

Rec'd & Typed 6-19-36 KW

A) At customer's request.

B) DeBolt is now asking for M & U paint quotations for a new building which is in course of construction. I gave him quotations on the various items listed in your letter of 5-26. He wants these confirmed by letter and wants prices in both drums and fives.

While he will probably use the same materials which Anderson does he also wants prices on lower priced mill whites to match with other competitive quotations which he is asking for. I suggest you quote on "Dulite" and on some orthodox mill white which can be sold for about \$1.75 or \$1.80. Quoting on a lower priced mill white will also make it necessary to quote on a lower priced undercoat.

We should also quote on Trim & Frellis Green for use on the metal window casements. He asked that we have these quotations in his hands not later than Monday June 22. Send him these dope in duplicate.

In addition DeBolt wants to get a list of all the items we sell Anderson both M & U and Industrial. He wants the name of the product, our code number, the Delco Specification number and the price. This can come thru after you have had an opportunity to collect the data.

I could make little headway with DeBolt on the possibility of increasing his takings of black, other

-over-

5278

than his admission that he was trying to squeeze us further on price.

I noticed that the code given in your letter for G.M. Gray Machinery Finish (53-403) is different than either of the grays we are selling to local machinery manufacturers for G.M. work. It might be well to check this point.

Had a few minutes with Litman before closing time and learned that the Black High Tension Cable Lacquer situation is all up in the air again. Belden is selling a Black H.T. cable which is far superior to the Packard Cable in heat resistance and their sales department is raising an awful howl. The Belden cable (imprinted "77 Belden 77" in orange) will stand eight hours at 300 deg. F. without cracking around a half inch mandrel. It also resists decomposition better in a crude test which Belden is promoting. This test consists of putting a 100 watt light bulb in a small cardboard box and suspending samples of cable to be tested about $\frac{1}{2}$ inch from the bulb. Litman says our finish decomposes very quickly whereas the Belden cable does not. The Belden cable also has satisfactory cold crack resistance. While X-600-213 is not good in this respect I urged Litman to test it because of its heat resistance. I am sending you a small piece of Belden cable which should be sent to Parlin. I will try to get more on my next visit.

Someone has already offered Packard a lacquer approaching the quality of the Belden finish but it is somewhat difficult to dry. We are going to have to move fast in doing likewise for there is no question in my mind but what Packard will be using a more heat resistant finish in the near future.

I will get more detailed information on the whole situation if possible early next week. However, if Parlin has any ideas at all I believe it would be well for Tom Taylor to stay over a day at the time he visits Ashtabula to discuss the situation with Litman. He has requested that we arrange this if at all possible.

C) Get M & U prices out promptly.

Give DeBelt a list of items purchased at Anderson with Delee specification numbers.

Get Parlin working on the Black problem at once.

Advise me whether Taylor can spend a day at Packard when he visits Ashtabula.

3001

FINISHES DIVISION Reg'd 6/25/42 Typ'd 6/26/42 J.A.
E. I. DU PONT DE NEMOURS & CO. (INC.)

War Service

BY E.J. Kidling DATE 6/24/42 REPORT NO. 98

CONTACT Packard Electric Co. - Div. of G.M.

STREET AND NO. Dana St.

TOWN Warren

STATE Ohio

PERSONS INTERVIEWED Dr. Littman

TITLE Chemist

Mr. A.H. DeBalder

P.A. Gen'l.

Mr. K.F. Bymond

Buyer, Maintenance

PRODUCTS USED	SPEC. NO.	PRIORITY RATING	PRICE PKG.	F.O.B.	FROM WHOM	APP. CONS. NEXT 12 MOS.	INITIATING GOVERNMENT AGENCY
CC	G.A.D.)	IN TURN					
	J.E.F.)						
	B.C. WILLIAMS						
	P.J. EHIG						
	C.J. LIKAKAH						

REPORTS ON CALLS MUST BE MADE ON BASIS OF:

(A) PURPOSE OF CALL (B) RESULTS OF CALL (C) ACTION NEEDED

A) To follow tests on

J 6200-4922 Clear Cable Lacquer

J 6200-4964 Blue Metallic Cable Lacquer

6233 Black Cable Lacquer

B) Dr. Littman advised tests on the drum of 6233 Black ran fairly equal to present source. Advised it was pretty hard to tell on a one drum run just what the material was capable of doing. However,

Government Defendants () Iden.
Exhibit 1323 Exhibit () Rec'd.

In the District Court of the United States, BEFORE
Master Harry A. Harnden, Eastern Division LA 945, J.

Harry A. Harnden - Official Court Reporter

as the black is now practically an obsolete item with them Dr. Littman stated it was impossible to have a longer run.

Dr. Littman advises that in the future where colored lacquer is necessary they will make their own colors using a clear as the base. In this respect he requested we send him 1 gallon of clear vehicle based on same composition as used in the black and he will test. (W)
(S)
(C)

The J 6200-4922 sample is still on test but Dr. Littman advises we may as well forget about this type of material as Bualight are going to produce their own. They have in the past produced their own low tension lacquers and feel they should do so in this case. So we can forget this item for time being. Dr. Littman was not sure whether the last sample J 6200-L-4964 Blue Metallic was the one tested which discolored but stated the Blue was out under the new idea of making their own colors. Asked Littman why we were not getting some of present business and who present suppliers were. He stated present main two suppliers were Fertig-Shorndorfer & Ayco Co., and stated they had been working on this type material for years with Packard but we would be given every consideration when occasion arose.

Discussed shipping the Red & Black Mchy finishes in 5's with Mr. K. Bymond. Told him shortage of 1 gal. cans forced us to do this. He was satisfied and stated they just dump the material into 1 gal. cans or paint buckets when needed. (W)
(S)
(C)

Spoke of our "three dimensional painting" with Dr.

(Over)

5280

-2-

Littman and he advised our Mr. Irwin was in on this last week.

C) Send - if satisfactory - 1 gal of clear based on same composition as the 6233 Black to Dr. Littman for test.
Please advise if we must do this for policy reasons.

(3003)

5281.

Copy to RMD.
" " JWN**E. I. DU PONT DE NEMOURS & COMPANY**

PAINTS & PLASTICS DEPARTMENT

MR. HENRY E. LACKEY
Wilmington.1616 Walnut Street
Philadelphia, Pa.
June 28, 1949~~FRIGIDAIRE - PORCELAIN FINISH~~

I understand that the publicity campaign by Frigidaire, featuring Porcelain finish inside and out on their refrigerators, is quite familiar to everybody in Wilmington but I am attaching copy of the ad anyhow for its informative value.

This brings back quite some interesting memories to you and myself because it portrays to my mind the dramatic episode at Parlin when Mr. Moosmann advised us some twenty years ago that we had lost our last DUCO(Frigidaire) account due to the fact that they had spent over \$1,000,000 in putting in their own Porcelain Enamelling equipment.

We all realize that these things do not happen all of a sudden; that Frigidaire must have been considering this major step for a number of years. Also none of us can overlook the fact that C. L. Van Derau, Manager of Westinghouse Elec. & Mfg. Company at Mansfield is and always has been pro-porcelain in his thinking and it was always considered absolutely necessary by me to develop on an annual basis evaluation ratings to convince Van and Frigidaire that DULUX offered superior advantages over Porcelain.

About ten or twelve years ago, after one of Van's visits to Phila., I wrote to Streeter a note re-emphasizing the necessity of presenting an annual progress report to both Frigidaire and Westinghouse in the same manner and we do accordingly with the Simmons Company as we did formerly with G.E. when we were handling the account. This type of procedure always enabled us to bring out into the open the thinking and ideas as to competitive threats to DULUX and enabled us to keep our fences strongly built so as to protect this business.

While recognizing the fact that there have been tremendous improvements in Porcelain as compared with DULUX and recognizing that the publicity campaign by Frigidaire on the subject of a Porcelain finish inside and out will undoubtedly have a major influence on the thinking of their principal competitors such as G.E., Westinghouse and others, it does seem to me that with the large "stake" we have in the refrigerator picture, the type of Porcelain used by Frigidaire should be re-evaluated against DULUX.

3064

5282

-2-

In this connection, the Frigidaire ad features nine plus values which are all powerful influences to the purchasers of refrigerators and DULUX should be evaluated against these factors. Also the production economics should be included as well as the field touch-up and repair factors.

In addition and based on this re-evaluation, it seems as though the situation calls for the preparation of a dynamic advertising campaign, featuring the advantages of DULUX on electrical appliances and particularly refrigerators, directed to the attention of the people who purchase electrical appliances.

Perhaps because of the fact that you and I have always had a lot of pride in the development of sales of DULUX to the refrigerator industry, I feel that I should at least place before you my current thinking and ideas which were generated by reading over the attached advertisement.

S:G

John W. Stutt
JOHN W. STUTT

3005

5253

JUN 7 1940

SALESMAN'S REPORT

J. J. Thompson

Introduction

105/40

Page No. 178

U.S. Patent and Trademark Office

MMI Call No. 3

E. L. Leffmann

Directed by

Page 48 Meldrum

S.H. Glens
Dr. Mayall & Son

Eng. New Products Div.

Parameters of MHI Activity

Competitive Product in Use (or Quoted)	Competitive Seller	Price	Next in Market	Approx. Annual Consumption	Corresponding du Peat Product	Quoted
				90-	V.A.G.	
					H.A.H.	
					S.A.W.	
					H.H.K.	
					P.P.V.	
					B.K.R.	
					H.L. 'ordan	
					San Francisco Office	

Like in THE Book All Stories And Literature Forwarded

List in This Block All Matches Forwarded

In addition to the information regularly reported in the body of the Trade Report, replies to the following specific questions should be made.

Answers may be numbered by question.

1. What technical problems should be investigated, or what other service do you desire for this firm prior to your next call?
 2. Is an increase or decrease expected here in the consumption of any particular item?
 3. What new competitive products are appearing on the market at this point?
 4. Has any situation developed of interest to our Credit Department?
 5. Is there any information of interest to another Department of the Company?

REMARKS

Collected with F. L. W. I.

Technical details of the discussion will be reported by F.L.Y. The following items, however, should be emphasized.

1. A rubber-like material is needed having the following characteristics:

1. Uniformity
 2. Dynamic fatigue resistance.
 3. Stability in physical properties at operating temperature of from -50° F. to + 180° F.
 4. Low Creep.
 5. Ability to bond to metal.
 6. Shear modulus of 754/sq. in. or less.

It should be noted that oil resistance is not one of the required properties.

2. While Sloman is now working with several G.M. units, he is planning to switch to Chrysler because they are so much more aggressive on developments pertaining to rubber.

5. Sisman believes that the mechanical applications of rubber and rubber-like materials will eventually demand the tonnage now used in tires.

In Reply Refer to
File No. 123-E-00

Government's Exhibit No. 1326

5251

August 22, 1946.

Mr. V. A. Cosler
E. I. DuPont de Nemours & Co., Inc.
1007 Market Street
Wilmington 98, Delaware

Dear Cos:

In order to complete my report on work done to date on the rubber suspension problem, I would appreciate it if you would have your laboratories send me the following samples of Neoprene:

Two (2) Yerzley Sheer specimens of each of
the following stocks:

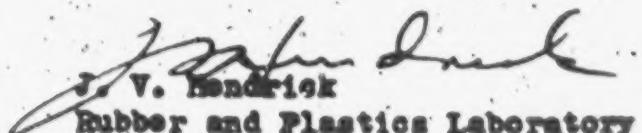
116CN-453
454
455
456
457
458

I have discussed our recent 'phone conversation regarding new polymers with the Chrysler management. They feel very pleased that DuPont is taking such an interest in this problem and will work according to your suggestions, that is, we will treat any samples submitted on purely research basis.

Personal regards.

Very truly yours,

CHRYSLER CORPORATION


J. V. Hendrick
Rubber and Plastics Laboratory

JVH/sl

3007



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED 1802
WILMINGTON, DELAWARE

5285

ORGANIC CHEMICALS DEPARTMENT

February 7, 1958

General Motors Corporation
Detroit Diesel Engine Division
13400 Outer Drive at P. W. R. R.
Detroit, Michigan

Gentlemen:

Attention: Mr. C. W. Trumall, Jr., Chief Engr.

In reply to your letter of February 1, we are enclosing a copy of issue No. 1 of "The Neoprene Notebook." Our stock of this issue is very low and it is fortunate that we received your letter before it was completely exhausted.

We note in your letter that you are using neoprene in your diesel engine injectors. In this connection we are wondering if you have made any applications of our material which we might use as a write-up in "The Neoprene Notebook." As you will note from our publication we do not mention company names; however, in any publicity distributed to trade papers and based on articles from "The Neoprene Notebook" we do include those names.

If you have any interesting applications which you believe might be suitable for our publication we would very much appreciate receiving the details so that we might prepare such a write-up. We could then submit the article to you for check before publication.

Very truly yours,

E. I. DU PONT DE NEMOURS & COMPANY, INC.

APVlast/e
Enc.

Rubber Chemicals Division

(3008 E)

{fol. 3009] No copies: probably written in 1946

GOVERNMENT EXHIBIT NO. 1329

THE ELECTROPLATING SITUATION

By F. F. Oplinger

This is a discussion of the present status of most of the Electroplating Processes in which Du Pont is interested. It is hoped that the picture as presented will serve as a guide in determining the lines which Research and Development should follow over the next year or two.

Outline

1. Copper Plating
2. Zinc Electroplating
3. Alloy Plating
4. Cadmium Plating
5. Silver Plating
6. Gold Plating
7. Tin Plating
8. Nickel Plating
9. Chromium Plating

COMMERCIAL COPPER PLATING

Present Status

Interest in copper plating in connection with the copper-nickel-chromium combination for decorative plating is greater than ever before and continues to be of utmost importance.

There is no really satisfactory process on the market as yet.

There are two schools of thought concerning decorative plating. One advocates the use of heavy nickel coatings, followed by chromium, dispensing with copper entirely; the other recommends heavy copper coatings, followed by light nickel and chromium.

The advocates of "no copper" argue that better corrosion protection is obtained by omitting copper. This is a controversial subject and absolute facts are not available.

Advantages of Using Copper.

1. Throwing power, except in the case of acid copper, is much greater than that of nickel, which is quite poor. For this reason, zinc die castings cannot be plated directly in nickel.

2. Copper is required to prevent attack of nickel solutions on the base metal, and to give satisfactory adherence to the nickel.

[fol. 3010] 3. Heavy, smooth deposits of copper on steel can readily be buffed. Polishing steel is a very expensive operation; when copper is used, less polishing on the steel is required.

4. Bright nickel deposited directly on polished steel would have to be buffed anyhow to cover die marks, etc., and buffing would be very difficult because of the hardness of nickel. Dull nickel on steel followed by buffing is in some cases a definite threat to any copper plating.

5. Corrosion resistance of the copper-nickel combination is about the same as that of an all nickel coating and may, according to some field tests, be better when properly applied.

Processes in Commercial Usage

(I) *Rochelle Type*—The old type Rochelle Process is suitable only for lightweight coatings. Such baths are fairly dilute and may contain:

Copper Cyanide	3.5 oz./gal.
Sodium Cyanide	4.6 "
Rochelle Salts	4.0 "
Sodium Carbonate	4.0 "

Only a small percentage of users continue to operate this bath.

(II) *Unichrome Copper Process*—This is an ammoniacal copper pyrophosphate type bath, being marketed by the United Chromium Corporation. Like Acid (Sulfuric) Copper, it is a monovalent bath.

This bath is fairly widely used. It is, at least to some extent, competitive with High Speed Copper. It is estimated that from 50,000 to 100,000 gals. of Unichrome

copper are in commercial operation. The bath has a number of advantages and some disadvantages.

Advantages

- a. Little trouble is experienced with roughness of deposits as in the case of High Speed Copper.
- b. No trouble has been experienced commercially with the adherence of subsequent nickel deposits, as in High Speed Copper.
- c. The bath is less sensitive to the effect of impurities, both organic and inorganic.

[fol. 3011] *Disadvantages*

- a. The major disadvantage of the process is the inability to use anything but low cathode current densities. The rate of plating is entirely too slow hence the bath cannot be used in many cases because the equipment required would occupy too much space and be too costly. Heavy coating (.001"-0.0002") cannot be produced on a large commercial scale because of this factor.
- b. Frequently the bath is difficult to control because of some unknown factors.
- c. A cyanide "strike" must be used prior to Uni-chrome copper and traces of cyanide are very bad when dragged into the plating solution.
- d. Completely satisfactory rinsing is sometimes very difficult to obtain.

Generally speaking, Uni-chrome does not appear to be a serious threat to High Speed Copper. Nevertheless some improvements must be made in our process in order to forestall wider usage of this process in certain types of installations.

(III) *Acid Copper Plating*—Ordinary acid copper plating as practiced for years continues to be used mainly for special purposes (printing rolls, etc.,) except in isolated cases, and is not a threat to High Speed Copper plating.

(IV) *Gen. Motors Acid Copper*—This is the old type acid copper process to which additional agents

have been added. This bath, developed just before the war, is now widely used, even throughout the General Motors Corporation. Indications are that control difficulties are too serious to make it a really satisfactory commercial bath.

(V) *Daybrite Acid Copper Process*—This is a newly developed process using the old type acid copper formulation together with addition agents and wetting agents. It has found only limited usage as yet but we anticipate that its use may become fairly general, but only *on the types of articles that do not require good throwing power*. Many items fall into this category hence *in time*, unless definite improvements in High Speed Copper plating are forthcoming, considerable loss of business, especially in steel automotive fittings and on some types of die casting, is anticipated.

[fol. 3012] *Advantages*

Insofar as can be determined accurately at this time, the process has a number of definite advantages.

- a. It plates about twice as fast as Unichrome which makes it about equivalent to the best that High Speed Copper can do. In some cases, speed of plating may exceed that of High Speed Copper.
- b. Difficulties with roughness are not serious even when the solution is agitated (cathode rod). Deposits are, for the most part, very smooth.
- c. Deposits are quite bright (sufficiently so to plate bright nickel directly), and also quite uniform in color. When too much current is used edges are burnt.
- d. Bright nickel deposits on this type of copper appear to have a higher luster and deeper color than on other type of copper deposits.
- e. This process is not difficult to control, according to present users.
- f. Quite low in cost, averaging about 15-25¢ per gallon for the solution. The addition agents are not especially high-priced.

g. Deposits buff beautifully.

h. Even though a wetting agent is used, no rinsing difficulties have been experienced between copper and bright nickel. Adherence of nickel is excellent.

Disadvantages

a. The solution has poor throwing power and cannot be used very satisfactorily on deeply recessed die castings because:

1. The solution itself will become loaded with zinc.

2. The nickel solutions will build up in zinc rapidly due to zinc dissolving.

b. The solution is quite acidic so special acid-proof equipment is required for filtration and handling. Rubber linings must be entirely free from pores, lest the acid eat holes in the steel tank.

[fol. 3013] c. The solution cannot be air agitated because this decomposes the addition agent.

Agitation (mechanical) is definitely required in order to use high current density or serious burning will take place.

d. Special racking is required on some types of articles so that proper agitation can be obtained.

In general, to the experienced plater interested in a low cost solution, this process has attractive features and we anticipate that in time it may replace some of our large full-automatic units used mainly for steel plating.

(VI) *MacDermid (Rocheltex Bath)*—This process is in very limited usage but is in direct competition with High Speed Copper. The bath formulation is about the same but the addition agents are different.

We expect the use of this process to grow as time goes on.

(VII) *Fluoborate Copper Process (General Chemical Co.)*—This process, which uses copper fluoborate, etc., manufactured by General Chemical, has limited commercial usage.

Formula:

$\text{Cu}(\text{BF}_4)_2$	—	224-448 g./l.
Cu	—	60-120 "
pH	—	1.2-2.2-0.6

Claimed Advantages:

Very high speed of plating up to 300 A/SF. Deposits buff very readily.

Disadvantages:

- a. Solution very highly acid, presenting serious equipment difficulties.
- b. Solution is expensive—\$1.50 to \$2.00 per gallon.
- c. For special purposes, this bath may in time find considerable usage.

(VIII) *High Speed Copper*—Our process has some very serious disadvantages. Unless these difficulties [fol. 3014] are eliminated or greatly minimized, progress will become more difficult and further serious loss of business will result. Specific examples of such losses of accounts are as follows:

Guide Lamp Dir., GMC, Anderson, Ind.

40-50,000 gals. lost. Converted to GMC Acid Copper. Further conversion and further installations of Acid Copper are anticipated.

Alemite Die Casting Corp., Corcoran Brown Lamp Division, Kings Mills, Ohio.

10,000 gals. lost to Unichrome.

Pontiac Motors Dir., GMC, Pontiac, Mich.

25,000 gals. Unichrome to be installed about January 1st.

Ternstedt Mfg. Co., Dir., GMC, Detroit, Mich.

8,000 gals. High Speed Copper, lost before the war, was never regained. The potential business there for a really good process is 50-75,000 gals. We have no chance of getting any of this business at present; at either the Detroit or Trenton, N. J. plant.

Miscellaneous Installations

an estimated 25,000 gals. has been lost to competition elsewhere during 1946.

A total of no less than 100,000 gals. has gone to competition during 1946. Further losses are anticipated unless improvements in our process are forthcoming.

Disadvantages of High Speed Copper

a. *Roughness*—The outstanding and most serious difficulty with High Speed Copper is the very serious tendency toward producing rough nodular deposits that are difficult or almost impossible to buff. Commercially, deposits entirely suitable for buffing (0.0005" to 0.0015") cannot generally be produced using current densities in excess of 15-20 amps, even under the most ideal conditions.

Note: The Research Group is actively working on this problem and definite progress seems to have been made.

Rough deposits on steel are almost universal. No [fol. 3015] competitive process has this difficulty in the same serious proportions.

b. *Nickel Adherence*—Frequent difficulties have been experienced with the adherence of Bright Nickel to High Speed Copper. The causes are wetting agents, impurities (organic and inorganic) or both. The above is true for buffed or unbuffed copper. Poor rinsing may also be a factor.

In any event, competition, so far as we have been able to determine, has less trouble along these lines. Less trouble has been experienced in recent months than formerly. However, in many cases, the situation remains critical.

c. *Buffing*—In general, High Speed Copper deposits cannot be buffed satisfactorily. This point is difficult to describe. Obviously, some of the difficulty (but probably not all of it) is due to roughness. Smooth deposits are not necessarily easy to buff, especially when bright.

Competition has used this weakness in our process quite widely. It was the primary reason for the Ternstedt Div., GMC interest in Acid Copper and accounted almost entirely for the fact that they give our process no consideration.

d. *Pitting*—Under certain conditions, High Speed Copper deposits are subject to very violent pitting unless a wetting agent is used.

RH 556 has, so far as we are aware, never failed to cure the difficulty but it has the serious objection that at times, when it or other wetting agents are used, good adherence of nickel is difficult to obtain. We now have four wetting agents—RH 556, RH 774, RH 1085, RH 1032. It would be highly desirable to have only one or two at the most.

Pitting is believed to be caused mainly by small amounts of organic or inorganic impurities, or both.

Competition, using the same conditions of cleaning and rinsing, seems to have less trouble with pitting. *Unichrome* does not use a wetting agent but requires periodic treatment with activated carbon to remove organic material.

Daybrite Acid Copper uses a wetting agent which does not interfere with nickel adherence.

[fol. 3016] Generally the trade prefers to use a process not requiring a wetting agent, hence it would be desirable to get away from the use of the term "Wetting Agent".

We have a number of solutions operating without "Wetting Agents", namely:

National Lock, Rockford, Ill.—1700 gal. full-automatic plating on steel—8 months operation.

Metal Finishing Co., Hamden, Conn.—steel-1 monfh.

Andovey Kent Mfg. Co., Middletown, Conn.—steel—4 months.

There is no serious objection to using any addition agent or wetting agent as long as it does not interfere with free rinsing or adherence of nickel or does not cause hard brittle deposits.

Research Suggestions

Note: Regardless of the difficulties with High Speed Copper as mentioned above, the process, because of certain basic factors, has a greater potential field of usefulness than any offered by competition.

It is characterized by:

- a. Superior throwing power.
- b. Double the plating rate of acid baths—cuprous vs. cupric.
- c. Direct application on steel or die castings.
- d. Low equipment cost because alkaline solutions are not as corrosive as acid solutions.
- e. Suitable for current reversal plating. This factor now appears to be of extreme importance.

No other process is directly competitive on the same basis. Therefore, with the proper research and development work, High Speed Copper should continue to lead the field for quite some time to come.

[fol. 3017] Bath Formulation

Ever since High Speed Copper was developed, the basic bath formulation has been:

	<i>RH 553</i>	<i>RH 661</i>
CuCN	16 oz./gal.	8 oz./gal.
NaCN	18.5 "	12.3 "
NaCNS	2 "	2 "
NaOH	4 "	-
KOH	-	6 "

NaCNS

Hitherto the function of the NaCNS has not definitely been understood. Originally, it was added because "it seemed to produce better results". The amount used was mainly the result of guesswork.

Later, work by H. L. Benner indicated that NaCNS reduced the bright plating range and may be harmful in other ways.

Quotations which remain unanswered are:

1. Just what are the limits of NaCNS concentration?
2. Does NaCNS function the same in both the Na and K baths?
3. While NaCNS is a brightener does it do more harm than good?
4. Most baths contain some impurities when made up. Is NaCNS itself a brightener or is its brightening action due to its reaction with organic material or inorganic impurities such as Pb?

Caustic Content (NaOH or KOH)

Originally NaOH (4 oz./gal.) was added to the RH 553 bath because uniformity and smoothness of deposits were improved. This bath operated with very low free NaCN (0.5 oz./gal., or less).

1. What should be the pH or caustic content of a High Free Cyanide bath as operated today? Some investigators claim when the pH is "too high" (above 12.6) the bath pits badly but does not when the pH is reduced.

[fol. 3018] 2. Does a pure bath (free from organic and inorganic impurities) require as much as 4 oz./gal. NaOH?

3. Should the pH be the same for the Na and K baths? When the K bath was developed, it was claimed that it was far less subject to pitting than was the Na bath. Is this a function of pH?

The Research Department is actively working on some of these problems and progress is being made.

Brightness for High Speed Copper Plating

When High Speed Cooper was developed, the feeling existed that a so-called "Bright Deposit" was the final answer to all copper plating problems. Entirely too much emphasis has been placed on "Brightness".

Plating of Steel

"Bright" deposits are not required on steel. In fact there may be some objection to having "bright" de-

posits on steel because such deposits are almost invariably hard, somewhat brittle, and difficult to buff. Bright, soft, easily buffed deposits present another story.

Copper plated on steel is invariably buffed hence there is no basic necessity for having a "bright" deposit unless the deposit "builds up" in brightness and hides imperfections in the steel thereby eliminating the necessity for buffing the copper prior to Bright Nickel plating. Current reversal shows considerable promise along those lines. Frequently a buffer prefers a dull deposit because when he buffs it bright, the contrast is so great he thinks he has really accomplished something. The main requirements of a copper deposit on steel are:

1. The deposit must be smooth.
2. The deposit must be soft enough that the wheel and buffering compound does not drag.
3. The deposit must be 100% free from nodules.
4. The deposit must be thick enough so that "cut thru's" are held at a minimum and so there is enough body to the copper to cover or conceal polishing scratches.

Additional agents for copper plating baths must have functions other than merely making a deposit bright.

[fol. 3019] *Brighteners for Plating Die Castings*

High luster of copper on zinc base die castings is highly desirable. Bright nickel functions best on a bright undercoat because when the undercoat is dull, excessive amounts of brightener are required in the nickel solution, causing brittle nickel deposits. Deposits on die castings must be absolutely uniform and free from films, even in the deepest recesses; otherwise poor coverage of nickel or adherence or both result.

Note: It is desirable to have a process applicable to both steel and die castings, but it may well be that we should have two processes—one for steel and another for die castings.

Current Reversal

Work on current reversal plating must continue. It has been installed in a number of General Motors Plants and has shown itself to be a very useful tool whereby:

1. Roughness of deposits is minimized.
2. Speed of plating may be increased 30 to 60%.

3. Uniformity of deposits is greatly improved.

3. Example: On samples of commercially plated Buick bumperettes, the thickness of deposits in the recess was equal to or greater than that on the high spot edge.

Note: While our information is not complete, all the information we have indicates that current reversal does not function especially well in Unichrome or Acid Copper plating. These facts should be checked.

Copper plating is by no means confined to the automobile industry, although this is probably its largest field, but definite and serious interest exists in the use of heavy copper coatings up to 0.03" on such things as printing rolls, bearings, etc. A very considerable amount of copper is plated on rolls. The main requirement in plating rolls is to put on uniform and smooth heavy weight coatings at a high rate of speed. Improvements, which are being made now, together with current reversal, lead us to believe that we can, when time permits, pick up a very considerable amount of business in the roll plating field.

Very serious interest in the plating of steel wire with heavy deposits (0.004" or more) of copper has arisen since the war. As time permits, we anticipate looking into this field also. Virtually all of these specialized uses are dependent on the ability to produce heavy, smooth deposits at high rates of speed. In other words, [fol. 3020] our research on copper, in many fields other than the automotive and the general plating trade, is important.

ZINC PLATING

Present Status

We have two processes—"Zin-O-Lyte" and "durobrite", both of which are well-established in the trade. They serve a very useful purpose and our competitive situation is very good in that we enjoy a major share of whatever business there is and should continue to do so for some time to come. In general our processes are superior to those marketed by competitors.

Service and salesmen are in an excellent position to handle and service present and new business.

Research

There is no *serious* need for broad basic research on cyanide zinc plating at this time, due mainly to our excellent present position in this field:

Research Possibilities

(I) *Stainless Non-tarnishing Bright Zinc*

Present-day bright zinc deposits remain bright for only limited periods due to tarnishing on aging and handling. There is an urgent need for improvement in this direction. Such improvement is now done by means of a series of chronic acid treatments (competitive processes)—Lusteron or Anozinc. These treatments are impractical and expensive and are in general not suitable for use in full-automatic equipment because of the many steps required by such treatment. The industry needs a bright deposit direct from the bath which, after rinsing and drying, is tarnish or stain-resistant or can be rendered so by some simple treatment not requiring a long series of dips.

Suggestions

Note: Acid zinc deposits are in general more resistant to tarnishing and staining than are those from cyanide solutions.

1. A very thin plastic film which does not change the color of the zinc to any great extent might be a partial answer.

2. New addition agents, that segregate or otherwise render certain impurities harmless, might be useful since impure deposits tarnish more readily than pure ones.

Note: "Spectroscopic Zinc"—100% pure or nearly so is very resistant to tarnish and is almost completely insoluble in mineral acids.

[fol. 3021] 3. A short heat treatment in a controlled atmosphere following plating might have some value since the film on hot galvanizing is quite resistant to tarnish even though the deposit may be very impure. The idea is to produce a molecular film having non-tarnishing qualities.

(II) Strip Steel

Complete information on the zinc cyanide plating of strip steel is not available. Serious work can be delayed until an actual installation is in prospect. The requirements for strip vary quite widely, depending on many factors and on the equipment that may be involved.

Uses: Heavy coatings (0.0005" to 0.001") on flat wire used for making BX cable. Current densities should be no less than 200 to 250 A/SF.

Heavy coatings (0.0005" to 0.002") on conduit pipe. Current densities no less than 200 to 250 A/SF.

Lightweight coatings (0.00005" to 0.002") on strip steel.

Note: A number of such installations, using cyanide solutions and low current densities of 50 A/SF, are now in commercial operation or in prospect.

Acid zinc solutions have several great advantages over cyanide solutions such as, speed of plating, and an apparent lower cost. The disadvantages of acid solutions are:

For Sulfate: Slow speed and sludge formation. Inability to hold pH of the solution, poor conductivity, and poor throwing power.

For Chloride: The chloride solution is very corrosive and equipment maintenance becomes a serious

problem. The throwing power is almost non-existent and the bath is difficult to control because of the effect of impurities.

(III) *Sulfamate Bath*

Some further work on the Sulfamate bath seems justified. It may offer real advantages over other types of acid zinc deposits. See Cleveland Group reports.

[fol. 3022]

ALLOY PLATING

Brass Plating

During the past ten years, Elchem has spent in excess of \$25,000 for improving present methods of brass plating. Prior to the war, a High Speed Brass process, which proved unsuccessful, for one reason or another, was developed.

Commercial brass plating as it is now practiced, i.e., for the production of lightweight coatings 0.0001" or less (mainly for coloring purposes), is reasonably satisfactory. Our high Speed Brass process offers little advantage over present methods, unless operated with extreme care and accurate control.

Offhand, it does not appear that cyanides alone (meaning some mixture of copper cyanide, zinc cyanide, and sodium cyanide) or the potassium formulation will provide a satisfactory answer to the problem of producing heavy coatings of 0.0005" or more. To produce such deposits on a practical economical basis, a new factor other than cyanide will have to be developed. Well-informed persons are not certain whether or not a process for producing satisfactory heavy coatings would be universally received by the trade because no serious demand for heavy coatings of brass exists. There are, of course, differences of opinion on this. For many purposes people will always prefer solid brass.

There is no serious need for research on brass plating for the time being except perhaps that of a scouting nature which may come as a result of members of our staff having new and radical ideas.

Other Alloy Plating

Elchem has spent a considerable amount of money on the development of various alloy plating solutions. The only moderately successful and important process developed during the last twenty years was Brite-A-Loy. This process was used commercially for a period of years for producing alloy coatings of 90% zinc and 10% cadmium. After suitable purification of the bath, i.e., removal of impurities such as copper and lead by low current density electrolysis, bright deposits having a very high luster were produced directly from the bath without the use of addition agents. In other words, cadmium in small amounts is very good brightener for zinc deposits. At the time the process was used commercially, cadmium cost about \$1.50 per pound. Through the use of Brite-A-Loy, a considerable saving to the customer was possible because Brite-A-Loy anodes sold for about 35¢ per pound.

The process was abandoned when the price of cadmium dropped quite low—around 60¢ per pound. The process had several serious difficulties. Anodes had to be removed from the solution when it was idle, otherwise all of the cadmium precipitated on the anodes and was lost as a sludge. Bright deposits could be produced only at high current density; hence the process was not too satisfactory for barrel plating.

Some consideration should be given to reviving this method of plating, if for no other reason, because the present serious shortage of cadmium may continue for a long period of time.

[fol. 3023] *White Brass Plating*

Some time prior to the war, a white brass plating process, 70% zinc and 30% copper, was developed. The process used copper cyanide, zinc cyanide, sodium cyanide, and caustic soda. Very bright, lustrous deposits were produced directly from the bath, using "Zin-O-Lyte" Brightener and A.A. "O" (Mo) Molybdenum. This was a reasonably good plating process. One serious difficulty was that the deposits, at least under certain conditions, were quite brittle. However, an apparent important advantage was the fact that the deposits were remarkably resistant

to tarnish. Under certain conditions they maintained their bright luster for a period of years. The process was finally abandoned, because at that time no large commercial usage was apparent, and our personnel became seriously interested in Bright Zinc and High Speed Copper plating.

It is recommended that the subject of white brass plating should be carefully reviewed by the Research Staff with the thought that, in the light of our present-day knowledge of plating, there may be sufficient reason for reopening the subject.

Copper-Nickel-Zinc Alloy

Several years ago, the Research Department did a considerable amount of work on the triple alloy of copper, nickel and zinc. This was somewhat similar to the alloy process (nickel, copper and tin) being exploited by the Hanson-Van Winkle-Munning Co., Matawan, N. J. Our process was abandoned chiefly because of the extreme brittleness of the alloy, the high rate of consumption of cyanide, and inability to fabricate any kind of suitable anode. The process exploited by Hanson enjoys moderate success for very limited and highly specialized usage. No extended usage is anticipated. For the time being, we have no interest in such alloys.

Nickel-tin Alloys

Years ago, in connection with the work on tin plating, the writer found that alloys of nickel and tin, either high or low nickel content, could be readily produced by adding sodium nickel cyanide to sodium stannate solution. Very little work was done but it is conceivable that such an alloy might be extremely resistant to corrosion—at least for certain purposes. A scouting program is recommended.

Recently, D. A. Swalheim suggested that the best way to approach the alloy plating problem was first to make some alloys by whatever means is available, and then by means of a series of corrosion tests, etc., to find out what they are good for. The general idea, as I understand it, was to determine a use for such alloys and then devise a means of obtaining them by electrodeposition. The writer believes that this idea merits serious attention and should

be discussed further at an early meeting of the Research Group.

CADMIUM PLATING

The cadmium plating situation varies greatly from that of zinc in that the supply of cadmium is insufficient to meet the demand and all indications are that this situation will continue for a long time to come. Consequently, the [fol. 3024] main job is to get cadmium materials to sell. Our sales are generally limited to ability to get materials.

The trade often speaks of doing cadmium plating without any specific reference to which process may be used. In other words, results with our own "Cadalyte" and a leading competitive process—Udylite, are generally about the same and meet requirements reasonably well. Even though our present process does have advantages in certain cases, this may mean very little to many potential customers because they have been in the habit of buying from Udylite for many years. In some cases, these habits are very strong.

We do not anticipate that the picture on cadmium will change very much in the near future.

SILVER PLATING

Present Status

The amount of silver plating has been reduced to about 20% of wartime volume. We anticipate that it will remain at this level, barring normal business fluctuation, for some time to come. No substantial new usage is in sight so far as we are aware nor are there any indications of such usage being contemplated by anyone.

The technique of silver plating was so greatly improved during the war years that the normal post-war requirements present no serious problem.

Research

No long-time research work is justified. Some work might be done in the development of brighteners. However, sales would not be large because, for the most part, regardless of what brighteners were developed, the trade would require a buffed or burnished finish. It is doubtful

whether the development of a new and radically different process would lead to increased profits to any great extent.

GOLD PLATING

Total U. S. consumption of gold plating materials is small and the sales profits are low.

There is no justification for research work on this item at this time.

TIN PLATING

Halogen-Tin Plating

The Du Pont Halogen-Tin process is being used successfully by a number of the leading manufacturers of tin plate. The Bethlehem Steel Co., a large producer, is currently showing serious interest. Royalties currently being paid to the Du Pont Company for use of this process are about \$50,000 a year.

The writer believes that we are quite vulnerable because the process, as it now stands, has some serious disadvantages, mainly the ease with which the solution oxidizes, and the sludge forms. Serious thought should be given to [fol. 3025] further research work on an improved process in order to protect our royalty position. The favorable situation we enjoy at present may be upset, perhaps as a result of one of our consumers or competitors developing a process which corrects or greatly minimizes the above mentioned difficulties.

Sodium Stannate-Sodium Acetate Process

This process is widely used throughout the general plating trade on items for which Halogen-Tin is not suitable. The process has been well-established for many years.

No research work is justified at this time but completed work on use of Potassium Stannate should be reviewed by the Research Group to familiarize them with the program.

Potassium Stannate, should it become readily available, might replace most of the sodium stannate.

NICKEL PLATING

The past history of Du Pont's activities in nickel plating is well known. Generally speaking, the Bright Nickel

plating situation has not changed for some time. The field is dominated by the following firms, probably in the order given:

McGoan Chemical Co.
Harshaw Chemical Co.
Udylite
Hanson-Van Winkle-Munning
The Seymour Chemical Co.

Factors of interest are:

1. All bright plating processes with the exception of Hanson's Nickel-Cobalt process are substantially alike. The solutions contain nickel sulfate, nickel chloride, boric acid, and various brighteners. For the most part they give the same general result.
2. All processes have poor throwing power as compared with cyanide or alkaline processes.
3. All processes are intolerant of impurities, organic or inorganic, and frequent or continuous purification is generally necessary to produce satisfactory deposits.

There is no room in the field for "just another process". Any alkaline process having good throwing power (better than the present processes) and capable of producing ductile nickel at a rate equivalent to the present ones should receive wide usage for both dull and bright nickel plating, providing the cost is not too far out of line.

Research work on this project is now under way.

[fol. 3026]

CHROMIUM PLATING

Some years ago, the Cleveland Group spent quite a bit of time and money in an attempt to develop a chromium plating process competitive with the present one. Those efforts were largely unsuccessful.

The demand for an improved chromium plating solution continues to exist. Further laboratory work (particularly scouting tests) seems justified, provided some one can suggest a new approach.

5.3106

Excerpts from

MINUTES OF MEETINGS OF INTERDIVISIONAL RELATIONS COMMITTEES

GENERAL PURCHASING COMMITTEE

GENERAL MOTORS CORPORATION

Held at Detroit, Michigan, on February 6, 1925.

- (e) Purchases from Outside Companies Obtainable from Allied Companies. A circular letter has been addressed to all purchasing agents requesting that report on GME-55 covering every purchase of materials from outside companies obtainable from allied companies be made. It was decided that these reports should be summarized and reviewed by the committee at its meetings.

* * * *

A study will be made to arrive at a method of determining how much lower the price of the successful outside company must be than the price of the allied company bidding in order to justify placing the business outside.

(3027 E)

DELAWARE REALTY AND INVESTMENT
COMPANY

Du PONT BUILDING

WILMINGTON, DEL.

April 13, 1944

MEMORANDUM DATED MARCH 29, 1944

Copies to: Members of Advisory Committee

Messrs. R. R. M. Carpenter

Pierre S. du Pont, III

S. Hallock du Pont

W. W. Laird, Jr.

Ernest N. May

H. Rodney Sharp

Irénée du Pont

Lammot du Pont

DELAWARE REALTY AND INVESTMENT
COMPANY
DU PONT BUILDING
WILMINGTON, DELAWARE

Subject: Advisory Committee consideration of whether it might be advisable to liquidate under the provisions of Section 112-b-7 of the Internal Revenue Code enacted with the 1943 Revenue Act.

This memorandum is not purported to include all factors relative to the subject matter, but instead is intended as a starting point to facilitate consideration of the subject by the Advisory Committee.

Section 112-b-7 permits complete liquidation with various specified conditions for Federal income tax purposes; a brief statement of the conditions being as follows:

- (a) Liquidation must occur within one of the months of March to December, 1944 (each inclusive).
- (b) Unrealized appreciation of the corporation's assets is not taxed to either the corporation or the stockholders.
- (c) Any surplus at the time of liquidation is taxed to the stockholders as a dividend at their current-year individual income tax rate.
- (d) The tax basis of the assets received in liquidation is the taxpayer's base of the stock cancelled or redeemed. (In the majority of cases, this would be an amount equivalent to \$1.00 per share of Delaware Realty and Investment Company stock owned.)

This tax base is increased by the amount of surplus taxed as a dividend (Item (c) above).

The Revenue Act of 1938 contained similar provisions, except that the liquidation was required to be in only the one month of December, 1938; this law was not enacted until May 27, 1938, with substantially no advance notice of these special liquidation conditions which constituted an innovation in income tax procedure. There were no corresponding conditions under 1938 Delaware law to so facilitate a liquidation, and if a liquidation had been effected, the total amount of "unrealized" appreciation would have

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been subject to Delaware income tax. Subsequent to 1938, liquidation provisions were enacted into the Delaware income tax law and they are currently in operation. Liquidation this year would incur no liability for Delaware income tax.

An attempt is now made here to crystallize how the liquidation conditions referred to above would apply in the case of Delaware Realty and Investment Company were it to liquidate thereunder. As a premise, the following Delaware Realty and Investment Company conditions are stated:

- (1) The "present value" of the annuity contract at December 31, 1943, is specified in the contract to be \$8,379,684.
- (2) Delaware Realty and Investment Company's insurance policies can be cashed for about \$1,725,000 without incurring any tax liability. Delaware Realty presently has about \$1,000,000 cash funds.

The two together, aggregating \$2,725,000 cash, could be used to retire the \$1,160,000 outstanding debenture notes, and about \$1,400,000 used toward settlement of the annuity contract.

- (3) Delaware Realty and Investment Company has a "closing agreement" with the U. S. Treasury Department covering treatment for income tax purposes of transactions relative to its annuity contract. This "closing agreement" was obtained by Delaware Realty and Investment Company incident to its paying sums aggregating about \$1,000,000 in settlement of disputed income tax liability for the years 1933/1938, and interest thereon. The "closing agreement" establishes the tax base of Delaware Realty's securities investments, and that all payments made under the annuity contract after May, 1939, (when payments had aggregated \$13,500,000, the amount of the annuity contract consideration) shall be treated as losses and expenses from the annuity contract. Accordingly, the \$900,000 annual payments under the annuity contract have been treated since May, 1939, as deductible expense in determining Delaware Realty's net taxable income; and apparently a present lump-sum payment in final settlement of the annuity contract would be a deductible expense.

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- (4) The following is a list of Delaware Realty and Investment Company's securities investments showing their tax base, "quoted" market value, and indicated appreciation:

	Market Value			
	A Share	Amount	Cost, and "tax base"	Profit, or "capital gain"
11,270 U. S. Steel common	\$ 53	\$ 597,310	\$ 342,455	\$ 254,855
9,600 Hercules Powder common	78	748,800	401,879	346,921
16,256 Du Pont \$4.50 cum. pfd.	128	2,080,768	1,298,056	782,712
25,500 Christiana 7% cum. pfd.	142	3,621,000	2,142,000	1,479,000
(*)		\$ 7,047,878	\$ 4,184,390	\$ 2,863,488
18,000 Christiana 7% cum. pfd.	142	\$ 2,556,000	\$ 1,512,000	\$ 1,044,000
96,000 Hercules Powder common	78	7,488,000	978,121	6,509,879
304,480 Du Pont common	145	44,149,600	3,736,979	40,412,621
49,000 Christiana common	2,300	112,700,000	2,970,359	109,729,641
		\$166,893,600	\$ 9,197,459	\$157,696,141
		\$173,941,478	\$13,381,849	\$160,559,629

(*) Segregation at this point is arbitrary; its purpose being to indicate profit which would be incurred to pay off the annuity contract by selection of securities having approximately \$7,000,000 value involving the minimum taxable gain. It is not known whether these securities plus \$1,400,000 cash would be acceptable to the holders of the annuity contract.

It is estimated that Delaware Realty's surplus after settlement of the annuity contract and upon liquidation would be approximately \$6,900,000, which is briefly explained as follows:

1. Surplus, December 31, 1943, per books	\$1,500,000
2. Annuity contract reserve, December 31, 1943, per books	\$10,900,000

Less: Value of assets required to pay off the annuity contract—assumed in the approximate amount of the "present worth" of the annuity. (In surplus account, the cost of paying off the annuity contract would offset this portion of the reserve which would no longer be required.)

8,400,000

Balance of the annuity contract reserve, being the special reserve required equivalent to 30% of the present worth of the annuity contract and which is Delaware Realty surplus accumulated in the early years of the annuity contract and set aside for such purpose	2,500,000
3. Capital gain which would be incurred in the use of securities in part settlement of the annuity contract (see tabulation above)	2,900,000
	<u><u>\$6,900,000</u></u>

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	<u>Entire Company</u>	<u>Each of 8 Families</u>	<u>Per Share D.R.&I. Co.</u>
Estimated surplus which would be taxable as a dividend in the tax return of each individual shareholder	\$6,900,000	\$862,500	\$8.63
Income tax on the preceding item at 70% (assumed to be the average tax rate applicable to Delaware Realty and Investment Company stockholders, and having in mind that this "income" would be substantially all additional above the normal annual income; probably the majority of Delaware Realty's shares would be subject to a tax rate higher than 70%, in some cases as high as 90%)	4,830,000	603,750	6.04
In order to have sufficient left after capital gains tax to pay the above income tax, it would be necessary to sell securities of market value of approximately	6,400,000	800,000	8.00

It is estimated the preceding item would consume the equivalent of approximately 82,000 shares Hercules Powder common which would leave thereafter the following securities, on which 1943 income was:

	<u>Entire Company</u>	<u>Each of 8 Families</u>	<u>Per Share D.R. & I. Co.</u>
14,000 Hercules Powder common @ \$2.50	\$ 35,000		
18,000 Christiana preferred @ \$7.00	126,000		
304,480 Du Pont common @ \$4.25	1,294,000		
49,000 Christiana common @ \$75.70	3,709,300		
	<hr/>	<hr/>	<hr/>
	\$5,164,300	\$645,538	\$6.46
Compared with Delaware Realty and Investment Company's 1943 distribution	<hr/>	<hr/>	<hr/>
	4,440,000	555,000	5.55
Indicated increased income to Delaware Realty stockholders (before tax thereon)	<hr/>	<hr/>	<hr/>
	\$ 724,300	\$ 90,538	\$.91
Retainable portion of preceding amount is 30% (based on the above assumed 70% average tax rate), or	<hr/>	<hr/>	<hr/>
	\$ 217,290	\$ 27,161	\$.27
	<hr/>	<hr/>	<hr/>

To obtain the indicated increased income of the preceding line, it would be necessary to have paid out total assets of \$14,800,000 (\$8,400,000 plus \$6,400,000). Although the securities retained by the Delaware Realty and Investment Company stockholders would be out of the company and held directly by the stockholders, they would have a low tax base to the stockholders.

Considering the above annual amount of \$217,290 as a "forgoing of income", or perhaps better expressed as a saving (disregarding fluctuation in value of the securities, and without discounting to a present-worth basis), Dela-

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ware Realty could afford to pay the annuity for 68 years ($\$14,800,000 + \$217,290 = 68$) in order thereby to retain in the company the \$14,800,000 of assets. The present joint and survivor life expectancy of the annuitants is some-

thing less than 17 years; on a 17-year basis, ownership of the \$14,800,000 assets would be obtained for only \$3,693,930 ($17 \times \$217,290 = \$3,693,930$) "forgoing of income" or savings. This is based on continued "status quo" of income tax rates and the conditions of Delaware Realty's "closing agreement" continuing to hold. Of course, in a relatively long period of years, all sorts of changes in tax conditions may come about, including possibly conditions more favorable to liquidation than those applying under this year's income tax law.

From the viewpoint of valuation: in the cases of the latest substantial gifts of Delaware Realty stock, values for gift tax purposes were finally settled at approximately 120% of the price of du Pont common stock on the date of gift. 120% of the present \$145 price of du Pont common is \$174. The four securities assumed on Page 4 to be retained by the stockholders after liquidation would have a "quoted" market value as follows:

14,000 shs. Hercules Powder common @ \$78	\$ 1,092,000
18,000 " Christiana 7% preferred @ \$142	2,556,000
304,480 " Du Pont common @ \$145	44,149,600
49,000 " Christiana common @ \$2.300	112,700,000

Aggregate value to all Delaware Realty stockholders	\$160,497,600
Value to each of the 8 families	\$20,062,200
Value per share of Delaware Realty and Investment Company	\$200.622

\$200.622 compared with \$174.00 indicates a 15% increase in amount on which death taxes might be applicable. It is entirely possible that in some cases the spread might be greater than 15%.

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Substantially all of the foregoing is consideration fundamentally from the tax angle, which although a very important factor, is not necessarily the only factor requiring to be considered and given relative weight. Some other factors which come to mind at the moment are:

Liquidation would afford greater flexibility, including better marketability, and permit of diversification. Without liquidation, the stockholders are practically compelled to go along together; whereas if liquidated, each stockholder could do as he thought best suited his individual purposes. There is no certainty whether these factors would in the final analysis represent reasons for or against liquidation.

Delaware Realty, at least to some extent, facilitates control of the du Pont and General Motors Industries. While liquidation would not eliminate this immediately, it would weaken it; more particularly so with the passage of time.

Welcome is extended to presentation of any thoughts or ideas, either in addition to or in amplification of the foregoing, which will facilitate the contemplated study and consideration.

E. H. Tinney

3/29/44

Government's Exhibit No. 1343-A

Schedule "I"

GENERAL MOTORS CORPORATION

Purchases From Competitors of E. I. du Pont de Nemours & Co.
SUMMARY

	1st. Six Months of 1948	Calendar Year of 1947	Calendar Year of 1946	Total
<u>Chemicals</u>				
Anodes	756,463.84	1,205,506.72	896,775.97	2,858,746.53
Solvents	1,982,383.24	3,183,403.19	1,799,285.21	6,965,071.64
Total Chemicals	<u>2,738,847.08</u>	<u>4,388,909.91</u>	<u>2,696,061.18</u>	<u>9,823,818.17</u>
<u>Finishes</u>				
Paints, Enamels, Primers & Laquers	3,494,153.17	6,844,012.84	4,104,669.23	14,442,835.24
Solvents	408,853.11	1,102,389.33	530,397.31	2,041,639.75
Thinner	362,148.87	582,796.30	291,219.05	1,236,164.22
Pyroxylin	69,887.77	105,482.48	37,577.67	212,947.92
Adhesives	1,697,504.33	3,055,580.69	1,967,476.55	6,720,561.57
Total Finishes	<u>6,032,547.25</u>	<u>11,690,261.64</u>	<u>6,931,339.81</u>	<u>24,654,148.70</u>
<u>Fabrics</u>				
Coated Fabrics	1,995,115.54	3,421,682.96	1,205,519.04	6,622,317.54
Imitation Leather	1,444,362.76	2,393,134.18	695,976.68	4,533,473.62
Total Fabrics	<u>3,439,478.30</u>	<u>5,814,817.14</u>	<u>1,901,495.72</u>	<u>11,155,791.16</u>
<u>Anti-freeze</u>				
Methanol Type	93,929.70	11,713.50	10,177.29	115,820.49
Ethylene Glycol type	20,639.06	31,136.83	10,655.83	62,431.72
Total Anti-freeze	<u>114,568.76</u>	<u>42,850.33</u>	<u>20,833.12</u>	<u>178,252.21</u>
GRAND TOTAL	<u>12,325,441.39</u>	<u>21,936,839.02</u>	<u>11,549,729.83</u>	<u>45,812,010.24</u>

Cost Analysis Section.

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GENERAL MOTORS CORPORATION PURCHASES OF
ANODES
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 AND 1947

(Listing suppliers of \$30,000 worth or more)

	Dollar Volume <u>1946*</u>	Dollar Volume <u>1947*</u>
Total Purchases from Firms Other than Du Pont	<u>\$897,000</u>	<u>\$1,206,000</u>
Allied Industrial Products, Inc.	274,000	124,000
The Udelite Corp.	143,000	288,000
McGean Chemical Co.	119,000	178,000
Hanson-VanWinkle-Munning Co.	89,000	219,000
American Smelting & Refining Co.	80,000	44,000
Chase Brass & Copper Co.	45,000	68,000
Revere Copper & Brass, Inc.	36,000	35,000
George L. Nankervis Co.	33,000	--
A. T. Wagner Co.	--	36,000
All Others (Over 25 suppliers)	78,000	214,000

Source: General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena,"-- Schedule "I 3a" p. 1, and Schedule "I 2a" p. 1.

* Figures rounded to nearest \$1,000.

GENERAL MOTORS CORPORATION PURCHASES OF
SOLVENTS (CLASSIFIED UNDER "CHEMICALS" BY GM)
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 AND 1947

(Listing suppliers of \$40,000 worth or more)

	<u>Dollar Volume</u> <u>1946*</u>	<u>Dollar Volume</u> <u>1947*</u>
Total Purchases from Firms Other than Du Pont	<u>\$1,799,000</u>	<u>\$3,183,000</u>
Detrex Corp.	212,000	338,000
Carbide and Carbon Chemicals Corp.	139,000	833,000
Parker Rust Proof Co.	123,000	166,000
McGean Chemical Co.	112,000	74,000
Solventol Chemical Products, Inc.	89,000	82,000
Harshaw Chemical Co.	62,000	51,000
Wyandotte Chemical Corp.	57,000	104,000
American Chemical Paint Co.	50,000	52,000
Carrier Stephens Co.	46,000	62,000
Norton Co.	44,000	95,000
North West Chemical Co.	44,000	--
Oakite Products Co.	43,000	47,000
Dow Chemical Co.	40,000	44,000
Udylite Corp.	--	79,000
Wm. Lynn Chemical Co.	--	74,000
Amsco Products Co.	--	56,000
Air Reduction Sales Co.	--	50,000
Pennsylvania Salt Manufacturing Co.	--	46,000
Klem Chemicals Works	--	42,000
Eaton-Clark Co.	--	40,000
All Others (Over 330 suppliers)	738,000	848,000

Source: General Motors Corporation tabulations of "Sales and Purchases
Data in Response to the Federal Grand Jury Subpoena" -
Schedule "I 3a," pp. 1-9, and Schedule "I 2a," pp. 2-8.

* Figures rounded to nearest \$1,000.

GENERAL MOTORS CORPORATION PURCHASES OF
PAINTS, ENAMELS, PRIMERS, AND LACQUERS
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 and 1947.

(Listing Suppliers of \$20,000 Worth or More)

	Dollar Volume <u>1946*</u>	Dollar Volume <u>1947*</u>
Total Purchases from Firms Other than Du Pont	<u>4,105,000</u>	<u>6,844,000</u>
Rinshed-Mason Co.	1,930,000	3,128,000
Pittsburgh Plate Glass Co.	572,000	916,000
Pontiac Varnish Co.	173,000	260,000
Kay and Ess Co.	136,000	220,000
Ferbert Schorndorfer Co.	124,000	291,000
Schenectady Varnish Co., Inc.	108,000	248,000
Roxaline Flexible Finishes, Inc.	108,000	--
R. A. Becker Co.	103,000	122,000
Standard Varnish Works	94,000	107,000
Parker Rust Proof Co.	61,000	--
M. B. Suydam Co.	56,000	104,000
The Stanley Chemical Co.	54,000	111,000
Thresher Varnish Co..	47,000	45,000
Arco Co.	35,000	160,000
Michigan Chrome & Chemical Co.	22,000	35,000
Jamestown Finishing Products Co.	22,000	32,000
Berry Brothers, Inc.	22,000	33,000
Forbes Varnish Co.	--	191,000
Interchemical Co.	--	68,000
Mansfield Paint Co.	--	56,000
Parker Paint & Varnish Co.	--	39,000
Glidden Co.	--	36,000
American Marietta Co.	--	32,000
Intercoastal Paint Co.	--	31,000
American Chemical Paint Co.	--	30,000
Egyptian Lacquer Co.	--	29,000
Saginaw Paint Mfg. Co.	--	27,000
Parr Paint & Color Co.	--	26,000
Nelson J. Quinn Co.	--	23,000
Advance Paint Co.	--	22,000
Insulation Mfg. Co.	--	22,000
Akron Paint & Varnish Co.	--	20,000
All Others (Over 400 suppliers)	438,000	380,000

Source: General Motors Corporation tabulation of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena"- Schedule "I 3b," pp. 1-9, and Schedule "I 2b" pp. 1-11.

* Figures rounded to nearest \$1,000.

5320

GENERAL MOTORS CORPORATION PURCHASES OF
 SOLVENTS (CLASSIFIED UNDER "FINISHES" BY GM)
 FROM SUPPLIERS OTHER THAN DU PONT
 FOR THE YEARS 1946 and 1947

(Listing Suppliers of \$12,000 Worth or More)

	<u>Dollar Volume</u> <u>1946*</u>	<u>Dollar Volume</u> <u>1947*</u>
Total Purchases from Firms Other Than Du Pont	<u>530,000</u>	<u>1,102,000</u>
Detrex Corp.	106,000	374,000
Liquid Glaze Co.	71,000	--
Grow Solvent Co.	43,000	40,000
Parker Rust Proof Co.	38,000	--
American Mineral Spirits Co.	35,000	74,000
Wyandotte Chemical Corp.	25,000	80,000
American Chemical Paint Co.	24,000	48,000
Western Solvents & Chemical Co.	16,000	68,000
Solventol Chemical Products, Inc.	--	54,000
G. S. Blakeslee & Co.	13,000	25,000
Amsco Products, Inc.	--	18,000
Anderson-Pritchard Oil Co.	--	18,000
Standard Oil Co.	--	17,000
Peerless Chemical Co.	--	16,000
U. S. Industrial Chemicals, Inc.	--	16,000
Buffalo Solvents & Chemical Co.	--	15,000
Shell Oil Co.	--	14,000
Carbide and Carbon Chemicals Co.	--	12,000
All Others (Over 100 suppliers)	159,000	213,000

Source: General Motors Corporation tabulations of "Sales and Purchases Data in response to the Federal Grand Jury Subpoena" - Schedule "I 3b" pp. 9-11, and Schedule "I 2b" pp. 11-15.

* Figures rounded to nearest \$1,000.

**GENERAL MOTORS CORPORATION PURCHASES OF
THINNERS
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 and 1947**

(Listing Suppliers of \$10,000 Worth or More)

	<u>Dollar Volume 1946*</u>	<u>Dollar Volume 1947*</u>
Total Purchases from Firms Other than Du Pont	<u>291,000</u>	<u>583,000</u>
Western Solvents & Chemicals Co.	31,000	25,000
Barker Chemical Co.	30,000	48,000
Socony-Vacuum Oil Co.	24,000	28,000
Standard Oil Co.	18,000	29,000
Amsco Products Co.	18,000	21,000
Lowe Bros. Paint Store Co.	18,000	--
Anderson-Pritchard Oil Co.	17,000	21,000
Eastman Kodak Co.	11,000	28,000
American Mineral Spirits Co.	11,000	16,000
Pierce & Stevens, Inc.	10,000	26,000
Shell Oil Co.	10,000	24,000
Rinshed-Mason Co.	--	75,000
Arco Co.	--	35,000
Moran Paint Co.	--	27,000
Pittsburgh Plate Glass Co.	--	22,000
Grow Solvent Co., Inc.	--	18,000
Union Oil Co.	--	11,000
Commercial Solvents Corp.	--	10,000
All Others (about 150 suppliers)	93,000	119,000

Source: General Motors Corporation tabulation of "Sales and Purchases in Response to the Federal Grand Jury Subpoena". - Schedule "I 3b," pp. 11-15, and Schedule "I 2b" pp. 15-19.

* Figures rounded to nearest \$1,000

GENERAL MOTORS CORPORATION PURCHASES OF
PYROXYLIN
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 AND 1947

	<u>Dollar Volume</u> <u>1946*</u>	<u>Dollar Volume</u> <u>1947*</u>
Total Purchases from Firms Other than Du Pont	<u>\$37,578</u>	<u>\$105,482</u>
Eastman Kodak Co.	37,039	103,222
Rinsched Mason Co.	539	2,072
Fabricon Products, Inc.	0	66
American Paint Co.	0	59
John C. Dolph Co.	0	24
Resinous Products & Chemical Co.	0	18
General Electric Supply Co.	0	8
Barnard-Porter-Remington & Fowler	0	5
McQuinn Paint Co.	0	4
Castines	0	3

Source: General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - Schedule "I 3b," p. 15 and Schedule "I 2b" p. 19.

* Figures rounded to nearest \$1.00

5323 GENERAL MOTORS CORPORATION PURCHASES OF
ADHESIVES
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 AND 1947

(Listing Suppliers of \$10,000 worth or more)

	Dollar Volume <u>1946*</u>	Dollar Volume <u>1947</u>
Total Purchases from Firms Other than Du Pont	<u>\$1,967,000</u>	<u>\$3,056,000</u>
Minnesota Mining & Manufacturing Co.	1,026,000	1,482,000
Flintkote Co.	342,000	502,000
J. W. Mortell Co.	146,000	248,000
Intercoastal Paint Co.	116,000	172,000
Kendall Co.	87,000	128,000
Industrial Tape Corp.	26,000	30,000
Parr Paint & Color Co.	24,000	36,000
St. Clair Rubber Co.	23,000	167,000
Witco Chemical Co.	22,000	54,000
Crane Co.	10,000	--
The Presstite Engineering Co.	--	31,000
U. S. Rubber Co.	--	15,000
Peter Cooper Corp.	--	14,000
J. J. Siefer Co.	--	11,000
All Others (Over 250 suppliers)	146,000	166,000

Source: General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - Schedule "I 3b," pp. 15-19, and Schedule "I 2b," pp. 20-25.

* Figures rounded to nearest \$1,000

GENERAL MOTORS' PURCHASES OF
COATED FABRICS
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 and 1947

(Listing Suppliers of \$30,000 Worth or More.)

	<u>Dollar Volume 1946*</u>	<u>Dollar Volume 1947*</u>
Total Purchases from Firms Other than Du Pont	<u>1,206,000</u>	<u>3,422,000</u>
Haartz Auto Fabrics, Inc.	375,000	1,413,000
Backstay Welt Co.	184,000	432,000
George R. Carter Co.	137,000	178,000
Detroit Gasket & Mfg. Co.	90,000	208,000
Jansen Mfg. Co.	58,000	--
U. S. Rubber Co.	52,000	435,000
Brunsene Co.	47,000	117,000
Chicopee Mfg. of Georgia	47,000	58,000
Allen Industries	46,000	72,000
Columbus Coated Fabrics Co.	38,000	134,000
Cotan Corp.	33,000	48,000
Goodall Fabrics	--	77,000
Automotive Products, Inc.	--	48,000
Hood Rubber Co.	--	36,000
All Others (Over 27 suppliers)	99,000	166,000

Source: General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena," Schedule "I 3c" p. 1, and Schedule "I 2c" pp. 1-2.

* Figures rounded to nearest \$1,000.

(3042)

GENERAL MOTORS CORPORATION PURCHASES OF
IMITATION LEATHER
FROM SUPPLIERS OTHER THAN DU PONT
FOR THE YEARS 1946 AND 1947

(Listing suppliers of \$2,000 worth or more)

	Dollar Volume <u>1946*</u>	Dollar Volume <u>1947*</u>
Total Purchases from Firms Other than Du Pont	<u>\$696,000</u>	<u>\$2,393,000</u>
Textileather Corp.	393,000	1,328,000
Federal Leather Co.	145,000	787,000
U.S.Rubber Co.	135,000	196,000
Ashtabula Hide & Leather Co.	13,000	11,000
Eagle Ottawa Leather Co.	8,000	4,000
Goodall Fabrics, Inc.	--	53,000
Blanchard Bros. & Lane Co.	--	13,000
All Others (8 Suppliers)	2,000	1,000

Source: General Motors Corporation tabulations of "Sales and Purchases
Data Submitted in Response to the Federal Grand Jury Subpoena" --
Schedule "I 3c" p. 2, and Schedule "I 2c" p. 2.

* Figures rounded to nearest \$1,000.

GENERAL MOTORS CORPORATION
COMPTROLLERS CIRCULAR LETTER

NO. 1383

DATE January 31, 1948

SUBJECT:

U. S. District Court Subpoena

5326

TO: Divisional Comptrollers

A Grand Jury Subpoena has been served upon General Motors Corporation which necessitates the compilation of certain sales and purchases data relative to previous transactions with the following companies including divisions, departments and subsidiaries:

E. I. du Pont de Nemours & Co.
Bendix Aviation Corp.
North American Aviation, Inc.
Ethyl Corporation
Kinetic Chemicals, Inc.
U. S. Rubber Co.
Remington Arms Co., Inc.

It is also necessary that the Corporation furnish the Government related information with respect to purchases effected from competitors of these named companies.

Detailed instructions relative to the preparation of the foregoing are contained in attachments "A" and "B". The following, however, briefly summarizes the general information required:

1. Annual sales to each of the aforementioned companies for each of the years of 1946 and 1947, as well as for the first six months of 1948, segregated according to your normal product breakdown.
2. Annual purchases from each competitor of E. I. du Pont de Nemours & Co. and Bendix Aviation Corp. of certain products for each of the years of 1946 and 1947, as well as for the first six months of 1948.
3. Annual purchases, by product, from North American Aviation Inc., Remington Arms Co. and competitors, for each of the years of 1946 and 1947, as well as for the first six months of 1948.
4. Annual purchases, by product, from Ethyl Corp., Kinetic Chemicals Inc. and competitors for each of the years from 1930 through 1947 (omitting the years of 1942 to 1945, inclusive), as well as for the first six months of 1948.

3047

5327

5. Annual purchases of tires and tubes from companies other than U. S. Rubber Co. for each of the years from 1927 through 1947 (omitting the years of 1942 to 1945, inclusive), as well as for the first six months of 1948.

All invoices and other related documents supporting this report are to be retained by the division until otherwise instructed by this office.

It is desired that this report reach the Cost Analysis Section by April 1, 1949.

R. E. Hammond
Comptroller

RCM:IB

3043

5008

INSTRUCTIONS FOR THE DEVELOPMENT OF SALES DATA

1. Total annual sales in dollars to each of the following companies and their subsidiaries, for each of the years of 1946 and 1947, as well as for the first six months of 1948:

E. I. du Pont de Nemours & Co.
Bendix Aviation Corp.
North American Aviation, Inc.
Ethyl Corp.
Kinetic Chemicals, Inc.
U. S. Rubber Co.
Remington Arms Co., Inc.

2. Sales to each of these companies are to be segregated according to your regular product breakdown, i.e., principal product (detail), parts and accessories and sundry sales.

3. Sales dollars indicated under the above classifications should be restricted to normal sales, excluding such items as; dies, patterns, tools, jigs, buildings, facilities, experimental or research services, et cetera. Particular care should be taken to ascertain that the foregoing or other such items have been eliminated from sundry sales reported herein.

4. The net amount of the sales invoice, and adjustments thereto, should govern (after considering equalized freight, discounts, et cetera). Since cash discounts normally are not netted on the individual invoices, the total cash discounts allowed each customer for the year may be allocated to the product on an appropriate basis from the information readily available.

5. All sales are to be limited to those consummated within the United States.

6. Sales effected through factory owned retail stores, branches, etc. are to be included, while such transactions made by dealers and distributors are to be excluded.

7. Transactions on government subcontracts are to be included.

8. Cash sales are to be excluded.

All invoices and other related documents supporting this report are to be retained by the division until otherwise instructed by Central Office.

5329

INSTRUCTIONS FOR THE DEVELOPMENT OF PURCHASES DATACompetitors of E. I. du Pont de Nemours & Co.

Total annual purchases in dollars from each supplier (including allied divisions), other than E. I. du Pont de Nemours & Co., or a subsidiary thereof, of each of the following products, for each of the years of 1946 and 1947, as well as for the first six months of 1948;

Chemicals

- (a) Anodes
- (b) Solvents (for metal cleaning, dry cleaning and extraction)

Finishes

- (a) Paints, enamels and primers
- (b) Lacquers
- (c) Solvents
- (d) Thinners
- (e) Pyroxylin
- (f) Adhesives

Fabrics

- (a) Coated fabrics
- (b) Imitation leather

Anti-freeze

- (a) Methanol type
- (b) Ethylene glycol type (permanent)

Attachment "B-1" is submitted as an aid in determining what type of items to include under the above product classifications. In addition thereto, any similar products purchased from competitors of E. I. du Pont de Nemours & Co. are to be included. Your report should not be restricted to the items listed.

The purchases reported for products reflected under "Finishes", "Fabrics" and "Anti-freeze" from companies other than E. I. du Pont de Nemours & Co. for the 1947 calendar year, should agree with those reported for the Federal Trade Commission Inquiry (Circular Letter #1376) by product classification, supplier and amount of each.

Competitors of Bendix Aviation Corp.

Total annual purchases in dollars from each supplier (including allied divisions) other than Bendix Aviation Corp. or a subsidiary thereof, of each of the following products, for each of the years of 1946 and 1947, as well as for the first six months of 1948;

6350

Competitors of Bendix Aviation (Continued)

- (a) Air brakes
- (b) Automotive brakes and parts
- (c) Carburetors and parts
- (d) Steering gear parts
- (e) Starter drives
- (f) Brake lining
- (g) Any other product which was also purchased from Bendix Aviation Corp.

Competitors of U. S. Rubber Co.

Total annual purchases in dollars of tires and of tubes obtained from each company other than U. S. Rubber Co., for the first six months of 1948 and going back as far as invoices are available, but not prior to January 1, 1927 (excluding the years of 1942 to 1945, inclusive). Any portion of this period not covered, due to the unavailability of invoices or for any other reason, is to be accompanied by a certificate indicating, lack of records, etc.

The total purchases from each supplier should be segregated between tires and tubes purchased for use on original equipment and those purchased for replacement or sale.

Tires and tubes purchased by Central Office and rebilled to you should not be reported.

Exclude tires and tubes purchased for replacement on company cars, trucks or other factory vehicles.

Include tire and tube purchases made for or by retail stores branches, etc.

North American Aviation Inc. and Competitors

Total annual purchases in dollars for each product obtained from North American Aviation, Inc., or a subsidiary thereof, for each of the years of 1946 and 1947, as well as for the first six months of 1948. On each of the products obtained from North American Aviation Inc. the annual purchases are also required for each such product purchased from each company (including allied divisions), other than North American Aviation, Inc., for the same period..

Remington Arms Co. and Competitors

Total annual purchases in dollars for each product obtained from Remington Arms Co., or a subsidiary thereof, for each of the years of 1946 and 1947, as well as for the first six months of 1948. On each of the products obtained from Remington Arms Co. the annual purchases are also required for each such product purchased from each company (including allied divisions), other than Remington Arms Co., for the same period.

5331

Ethyl Corp. and Competitors

Total annual purchases in dollars for each product obtained from Ethyl Corp., or a subsidiary thereof, for the first six months of 1948 and going back, on an annual basis, as far as invoices are available, but not prior to January 1, 1930 (excluding the years of 1942 to 1945, inclusive).

On each of the products obtained from Ethyl Corp. the annual purchases are also required for each such product purchased from each company (including allied divisions), other than Ethyl Corp., for the same period.

Kinetic Chemicals, Inc. and Competitors

Total annual purchases in dollars for each product obtained from Kinetic Chemicals, Inc., for the first six months of 1948 and going back, on an annual basis, as far as invoices are available, but not prior to January 1, 1930 (excluding the years of 1942 to 1945, inclusive). On each of the products obtained from Kinetic Chemicals, Inc. the annual purchases are also required for each such product purchased from each company (including allied divisions), other than Kinetic Chemicals, Inc., for the same period.

General

- (a) All purchases are limited to those consummated within the United States.
- (b) Allied purchases are to be restricted, when possible, to materials manufactured or processed by the supplying division.
- (c) Purchases effected by factory owned retail stores, branches, etc. are to be included, while such transactions made by dealers and distributors are to be excluded.
- (d) Transactions on government contracts are to be included.
- (e) Purchase price adjustments received through Central Office should be excluded, but any adjustments received directly from the supplier should be considered.
- (f) Net amount of the invoice, and adjustments thereto, will govern after giving consideration to special price discounts, etc. The cash discount rule outlined for sales is also applicable to purchases.
- (g) Cash purchases are to be excluded.

All invoices and other related documents supporting this report are to be retained by the division until otherwise instructed by Central Office.

The following attachments are also furnished as an aid in preparing this report and are not to be considered complete or comprehensive:

- 4.
1. Attachment "B-2" listing suppliers from whom some of the products referred to herein may have been acquired.
2. Attachment "B-3" lists some of the major subsidiary companies, departments and divisions of E. I. du Pont de Nemours & Co. and Bendix Aviation Corp.

5333

The following list is indicative of the type of items to be included as competitive purchases under section "Competitors of E. I. du Pont de Nemours & Co." (your report should not be restricted to these items):

CHEMICALSAnodes

Graphite Anodes
High Purity Zinc Base Anodes
High Speed Brass Anodes
Nickel Anodes
Pur-o-tin Anodes
Tin Anodes
Tin Crystals
Zinc Dust
Block Anodes
Cadmium Anodes
Copper Anodes
Lead Anodes
Nickel Anodes
Zinolyte Anodes

Solvents

Carbon Tetrachloride
Chloroform
Perchlorethylene
Polyvinyl Alcohol
Tetrachlorethane
Acetic Acid
Aqua Ammonia
Sulfuric Acid
Muriatic Acid
Nitric Acid
Ammonium Hydroxide
Duclean
Soldering Flux
Cut Acid Flux
Kleanrol Crystal
Tinning Flux
Acetone
Liquid Chlorine
Orthodichlorobenzene
Hydrofluoric Acid
Hydrofluosilic Acid
Phosphoric Acid
Acetic Anhydride

3054

FINISHES

Paints, Enamels and Primers
Oil Type Varnishes, Stains,
Driers & Treated Oils
Oil Type Varnishes & Japans -
Black
Synthetic Resins & Varnishes
Synthetic Resin Pastes
Synthetic Resin Enamels
Synthetic Resin Undercoats
Ready Mixed Oil Type Paints
Oil Type Pastes
Putties & Ground Colors
Pyroxylin Putties & Stencil
Pastes
Bronze Powder
Aluminum Powder & Paste
Recovered Primer & Enamel Sludge
Maintenance Paints
White Lead in Oil
Pyroxylin Base Undercoats

Lacquers

Clear Pyroxylin Base Lacquers
Pyroxylin Base Enamel Lacquer

Solvents

Acetylated Solvents

Thinners

Thinners for Pyroxylin
Lacquers & Enamels
Thinners for Synthetic Resin
Enamels

Adhesives

Heavy Bodied Cements &
Pyroxylin Solutions

FAHRICS

Coated Fabrics
Fabrikoid
Fabrilite
Cavalon
Fairprene

5335

The following list of companies from whom some of the aforementioned products may have been acquired is being furnished as a possible aid in determining various suppliers of certain products. However, in addition thereto, purchases made from suppliers other than those listed are to be reported. Your local purchasing department can probably best determine the names of other suppliers.

CHEMICALSAnodes

Hanson - Van Winkle
Chase Brass and Copper
Hewitt Metals
Udylite Corp.

Federated Metals Division
McGean Chemical Co.
Eaton Chemical

Solvents

Kelite Products Inc.
Parker Rust Proof Co.
Wyandotte Chemical
American Chemical Paint Co.
Detrex Corp.
Klem Chemicals
Shell Oil
Apex Chemical Mfg. Corp.
G.S. Blakeslee and Co.
Fletcher Oil Co.
R.O. Hull and Co.
McGean Chemical Co.
G.L. Nankervis Co.
F.B. Stevens Co.
Udylite Corp.
Western Solvents and Chemical Co.
Eaton Chemical and Dyestuff Co.

Grow Solvents
Hoosier Solvents and Chemical Co.
Western Solvent and Chemical Co.
Apex Chemical Co.
B&B Chemical Co.
Sliger Chemical Co.
London Sales Engr. Co.
American Mineral Spirits Co.
Dow Chemical Co.
Industrial Chemical Co.
Industrial Chemical Products.
Peerless Chemical Co.
Reliance Chemical Co.
Sno-Flake Products
A.T. Wagner Co.
A.E. West Petroleum Co.

FINISHESPaint, Enamel, Primer and Lacquer

Cummings Brothers
Flint Paint and Varnish
Forbes Finishes Division
Pontiac Varnish Co.
M.B. Suydam Div.
Truscon Laboratories
Morgan Auto Paint
Rex Sales
Barney Taylor Co.
Rinshed Mason
Dibble Color Co.
J.W. Mortell Co.
Siebert Varnish Co.
C.L. Schroeder and Bros.
Expert Window Cleaning Co.
Bricker and Andes

G.L. Nankervis Co.
R.J. Brown
Gage Products
Grow Solvent
Pontiac Paint Co.
Egyptian Lacquer Mfg. Co.
Ferbert Schorndorfer Co.
Rogers Paint Products
Stanley Chemical Co.
A.T. Wagner Co.
Acme White Lead and Color Works
Bins and Equipment Mfg. Co.
Boyer Campbell Co.
Di-Noc Co.
E.R. Kriper Hardware
Gagnier Paint Co.

3056

FINISHES

Paint, Enamel, Primer and Lacquer (Continued)

Eastern Lacquer
Kellerman Paint Co.
Metro Lacquer and Fender Co.
Intercoastal Paint Corp.
A.C. Horn
Anderson Puchard Oil Co.
Standard Oil Co.
Boydell Bros.
American Marietta Co.
Tropical Paint and Oil Co.
Sargent - Gerke Co.
The Garland Co.
Morley Bros.
Saginaw Paint Mfg. Co.
Buckeye Paint and Varnish Corp.
Union Oil Co.
The Barrett Div.
Saginaw Hardware Co.
Missouri Solvents and Chemicals Co.
Socony Paint Prod.
Interchemical Corp.
Baer Bros.
Anderson Pritchard
R.A. Becker
Commercial Solvents
Hoosier Solvents
Insulation Mfg.
Schenectady Varnish Co.
Baker and Collinson
Delscamp Paint and Glass Co.
General Electric Supply Corp.
J. Goldberg
Hooker Glass and Paint Mfg. Co.
National Lead
Pittsburgh Paint and Glass Co.
Testor Chemical Co.
Sky Bright Co.
Tung Oil Paint Mfg. Co.
American Chemical and Paint Co.
Bestall Inc.
Falks Finishes
Parr Paint and Color Co.
Sno-Flake Products
Arco Co.
Glidden Co.
Kay and Ess Co.
Western Solvent and Chemical
V.E.P. Co.
Metals Disintegrating Co.
Forbes Varnish
Irving Jervel and Vinson Co.
Lowe Bros. Co.
Roemhildt Co.
M.B. Suydam Co.
Phelan Faust Paint and Mfg. Co.
Wagenman Paint Co.
Geo. Worthington Co.
Berry Bros.
Ozalid Div.

Solvents

American Mineral Spirits
Galsol Inc.
Detrox Corp.
Di-Noc Co.
Ferbert Schorndorfer Co.
Grow Solvents Co.
Peerless Chemical Co.
Rinshed Mason
Shell Oil
Sherwood and Co.
Sno-Flake Products
F.B. Stevens Inc.
Tung Oil Paint Mfg. Co.
A.T. Wagner Co.
Western Solvents' Chemicals
Wyandotte Chemical Corp.

Thinner

Standard Oil Co.
G.L. Nankervis Co.

Shell Oil

Government's Exhibit No. 1344

SALES BY PRODUCT TO
GENERAL MOTORS CORP. AND 100% OWNED SUBSIDIARIES
FOR THE FOLLOWING YEARS
AND INDUSTRIAL DEPARTMENTS
L. I. DU PONT DE NEMOURS & CO.

(5340)

	1938	1939	1940	1941	1946	1947
--	------	------	------	------	------	------

AMMONIAProductAnti-freeze

Ethylene Glycol Type	6	-	--	\$342,750	\$296,894	\$266,891	\$969,412
Ethanol Type	-	-	-	-	-	35,382	-
Methanol Type	289,231	404,697	455,532	428,014	366,712	740,774	
Total Anti-freeze	289,231	404,697	798,282	724,908	668,985	1,710,186	
Anhydrous Ammonia, Cyl.	6,017	9,952	16,290	31,739	12,465	15,608	
Anhydrous Ammonia T/C	--	--	-	2,610	1,311	-	
Aqua Ammonia	-	14	-	213	11	73	
Ammonium Bicarbonate	-	-	-	--	-	2	
Ammonium Carbonate	--	--	-	--	-	40	
Ethylene Glycol	-	--	-	110	--	-	
Hexalin	-	-	46	--	-	-	
Isobutanol	-	--	-	-	-	8	
Methyl Methacrylate Monomer	-	--	-	6	-	-	
Methanol	6,217	10,481	11,745	13,184	2,935	-	
Sulfur Dioxide	-	--	-	39	-	-	
Urea, Crystal	-	--	-	--	58	162	
Total	301,465	425,144	826,363	772,809	685,765	1,726,079	

FABRICS & FINISHES DEPARTMENTFinishes Products

Faorikoid	151,555	278,811	755,393	1,221,325	1,021,537	2,380,547
Faorilite	--	--	-	-	755,995	1,151,289
Cavalon	248,552	473,814	486,659	499,269	254,865	41,285
Fairprene	66,250	51,229	43,228	52,485	50,769	66,195
<u>Finishes Products</u>						
Oil Type Varnishes, Stains, Driers & Treated Oils	37,427	54,454	66,939	79,790	113,766	222,303
Oil Type Varnishes & Japans - black	4,043	5,082	9,212	6,518	19,493	62,758
Synthetic Resins & Varnishes	7,005	7,879	15,487	10,813	17,840	41,535
Synthetic resin Pastes	-	50	431	268	159	1,079
Synthetic Resin Enamels & Undercoats	740,114	1,115,948	1,365,852	2,021,446	1,586,320	3,179,225
Ready Mixed Oil Type Paints	658,894	1,031,099	1,137,174	1,322,432	1,462,622	2,595,792
Oil Type Pastes	3	956	925	(or) 245	415	-
Thinner for Pyroxylin Lacquers & Enamels	1,551,357	1,838,477	2,160,878	2,461,583	2,394,809	3,842,804
Thinner for Synthetic Resin Enamels	41,995	57,201	52,654	92,026	84,620	109,722
Putties & Ground Colors	3,313	2,506	5,084	11,611	6,178	10,542
Clear Pyroxylin base Lacquers	138,370	226,232	205,265	191,906	236,972	277,862
Pyroxylin Base Enamel Lacquer & Undercoats	2,879,877	4,247,296	6,510,827	7,114,630	4,279,815	8,104,132
Heavy Bodied Cements & Pyroxylin Solutions	2,533	2,951	13,440	6,679	11,260	11,654
Pyroxylin Putties & Stencil Pastes	2,332	3,249	3,212	3,903	3,894	3,506
Rubbing & Polishing Compounds	39,356	61,951	60,209	66,692	45,130	202,501
Plastic Protective Coating	--	--	--	--	2,096	-
Wax Solid & Liquid	--	3	(or) 3	--	(or) 8	-
Bronze Powder	2,695	840	1,703	2,845	2,504	1,511
Aluminum Powder & Paste	--	211	35	20	13,225	9,665
Recovered Primer & Enamel Sludge	--	--	--	1,729	3,097	21,030
Maintenance Paints	79,278	96,698	112,297	108,250	124,645	220,608
Miscellaneous Raw Materials & Supplies	5,429	4,391	2,626	17,045	21,000	-
Acetylated Solvents	1,229	3,330	2,814	5,567	-	-
White Lead in Oil	79	45	-	-	--	-
Total	36,659,586	49,568,703	51,012,341	615,298,587	612,513,018	622,577,545

ELECTROCHEMICALS DEPARTMENT

(5341)

1947

Products	1938	1939	1940	1941	1946	1947
Accelerated Salts	3,702	4,390	--	56	28	1,101
Anode Masks & Mangers	--	--	--	--	169	9
Black Cobalt Oxide	15,782	26,887	--	--	--	--
Calcium Metal	356	1,405	56,467	2,955	--	--
Carbon Tetrachloride	558	1,218	2,099	2,891	5,061	7,245
Carburizing Salts	--	990	6,430	8,848	15,897	19,493
Case Hardener 30X	2,542	9,671	17	930	--	--
Chevrolet #30 & #35	--	--	10,500	21,819	5,150	--
Chloroform	--	--	--	--	16	--
Copper Cyanide	6,013	7,208	17,100	27,778	25,093	40,250
Cyanide-Chloride Mixture 75% & 45%	35,072	65,010	44,450	61,203	38,330	52,020
"Darnil" (ounces)	--	4	59	--	16	--
Formaldehyde	181	79	--	75	1,835	568
Graphite Anodes	--	--	18	15	--	--
Heat Treating Salts	--	162	353	1,087	6,735	9,652
Hexamethylenetetramine	198	149	1,813	6,720	5,652	1,794
High Purity Zinc-base Anodes	397	--	--	--	--	--
High Speed Brass Anodes	--	--	--	258	--	--
Hydrogen Peroxide	14	55	84	94	143	651
Methyl Chloride	205	970	1,406	2,092	3,328	1,136
Nickel Anodes	--	--	--	1,431	--	--
Paraformaldehyde	--	6	--	48	22	--
Perchloroethylene	--	20	11	--	--	--
Polysulphide	--	301	977	1,012	--	--
Polyvinyl Acetate	6	--	--	--	--	25
Polyvinyl Alcohol Commercial	10	--	--	--	--	17
Potassium Cyanide	--	--	64	7,481	40,205	--
Potassium Cyanide Special	--	--	1,312	--	13,481	118,042
Potassium Ferrocyanide	--	--	2	59	--	--
Potassium Gold Cyanide 41% (Oz.)	--	--	15	173	--	--
Potassium Hydroxide	--	8	42	--	--	--
"Pur-o-tin" Anodes	--	--	596	5,036	5,062	1,822
RH 309 Zinc Plating Brightener	--	--	2,502	8,908	21,684	19,671
RH 460 "Elvacet" Emulsion- Polyvinyl Acetate	--	--	--	7	--	--
RH 488 "Elvanol" Polyvinyl Alcohol	--	--	4	--	--	--
RH 489 "Elvanol" Polyvinyl Alcohol	--	--	7	--	--	--
RH 491 "Elvanol" Polyvinyl Alcohol	--	--	12	--	--	--
RH 539 Ethanol Acetamide	--	--	5	--	--	--
RH 546 Plating Brightener	379	963	(er)138	--	--	--
RH 553 Nitroso Co. or Plating Salts 2,200	--	30,523	67,203	186,166	2,550	3,122
RH 555 Sodium Tetracyanide	431	473	680	210	--	--
RH 556 Addition Agents for HiSpeed Copper Plating	100	1,499	2,981	6,056	1,726	3,312
RH 584 Dimethylol-Urea	--	--	2	--	--	--
RH 623 "Elvanol" Polyvinyl Alcohol	--	--	4	--	--	--
RH 661 Potassium HiSpeed Copper Plating Salts	--	--	--	--	268,348	303,198
RH 774 Addition Agents for HiSpeed Copper Plating	--	--	253	4,477	10,259	27,194
RH 775 Brass Plating Salts	--	--	--	469	--	--
RH 1032 Addition Agents for HiSpeed Copper Plating	--	--	--	--	4,625	(er)660
RH 1085 Addition Agents for HiSpeed Copper Plating	--	--	--	--	9,430	5,500
Silver Cyanide (Oz.)	--	226	3,894	23,411	--	--
Silver Preparations	--	--	--	--	124	164
Sodium Cyanide	68,267	94,751	96,230	249,189	210,048	277,341
Sodium Gold Cyanide 46%	--	--	--	161	--	17
Sodium Lead Alloy Hydride	--	--	1	--	--	--

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ELECTROCHEMICALS DEPARTMENT (CONT'D.)

	1938	1939	1940	1941	1946	1947
<u>Products</u>						
Sodium Monoxide	—	—	—	—	—	15
Sodium Perborate	—	60	6	80	—	40
Sodium Stannate	15,945	28,737	27,391	87,949	19,172	42,473
Sodium Sulphocyanide	—	--	180	150	—	—
Tetrachlorethane	--	--	--	--	—	34
Tin Anodes	337	133	—	--	—	—
Trichlorethylene	677	—	55	--	161	627
Zinc Cyanide	1,254	1,535	4,560	5,742	16,449	9,321
Total	1151,714	3273,443	349,647	3719,294	730,798	3943,394

GRASSELLI CHEMICALS DEPARTMENT

	1938	1939	1940	1941	1946	1947
<u>Products</u>						
Acetic Acid Glacial C.P.	699	1,917	835	1,074	865	(cr)107
Acetic Acid Glacial U.S.P.	—	—	—	—	29	53
Acetic Acid Glacial	409	341	271	611	626	1,332
Acetic Acid 28%	--	--	—	7	--	—
Acetic Acid 56%	—	—	--	101	--	—
Aqua Ammonia 26	550	547	518	2,037	7,276	14,821
Ammonium Sulfate	10	--	--	--	—	—
Chromic Acid Flake	81,231	140,889	205,094	221,564	213,212	316,500
Sulfuric Acid C.P.	2,311	3,650	3,898	2,932	806	1,888
Nuriatic Acid C.P.	3,809	2,202	2,566	2,995	1,480	1,929
Nitric Acid C.P.	987	1,067	1,317	2,039	1,438	1,609
Ammonium Hydroxide C.P.	477	644	793	1,671	1,821	2,086
Duclean #1A	310	1,790	1,696	1,790	1,574	2,019
Duclean #2	—	43	64	24	95	110
Formic Acid 90% Technical	—	—	14	(cr)14	102	58
Inhibitor #3	—	(cr)92	99	157	—	(cr)99
Inhibitor #8	666	640	650	688	757	1,225
Lactic Acid Lt. 44%	—	—	--	--	1,621	3,560
Nuriatic Acid 18°	20,521	27,072	33,836	43,268	31,056	47,509
Nuriatic Acid 20°	2,307	4,502	4,644	8,982	11,139	10,092
Nuriatic Acid 20° BD5	—	—	--	--	—	478
Nuriatic Acid 22°	693	929	1,726	613	—	—
Nitric Acid 36'	16,985	24,956	28,647	16,812	5,623	1,329
Nitric Acid 38°	1,405	2,056	2,669	4,540	1,154	3,861
Nitric Acid 38° Spec. G.F.C.	491	261	649	5,226	412	2,762
Nitric Acid 40°	233	208	305	859	20	4,817
Nitric Acid 40° L.I.	54	—	23	--	--	—
Nitric Acid 42	227	181	331	130	1,668	1,482
Nitric Acid 42° L.I.	—	—	—	—	119	—
Nitric Acid 60-62% basis 100%	—	—	—	11,716	11,616	16,828
Sulfuric Acid 66°	55,853	68,384	91,642	99,269	76,426	114,067
Sulfuric Acid 66° + v	—	—	—	—	7,190	9,743
Sulfuric Acid 1.835	60,800	89,376	124,505	137,343	81,629	174,699
Sulfuric Acid 1.225	—	—	--	--	—	—
Sulfuric Acid 1.260	—	—	—	1,222	—	—
Sulfuric Acid 1.275	—	—	--	15	—	359
Sulfuric Acid 1.300	—	—	--	—	4	42
Sulfuric Acid 1.335	—	—	45	41	58	68
Sulfuric Acid 1.345	—	—	—	--	—	9
Sulfuric Acid 1.400	161	192	76	75	27	57
Sulfuric Acid 1.500	9	5	--	--	—	—
Aluminum Sulfate 17 Ord.	28	—	30	34	—	72
Ammonium Chloride Gr. #1	—	—	—	27	—	272
Ammonium Chloride Gr. #2	—	—	—	7	58	—
Ammonium Sulfamate	—	1	—	—	—	—

GRASSELLI CHEMICAL DEPARTMENT (CONT'D)

(5343)

	1938	1939	1940	1941	1946	1947
Products						
Barium Chloride Anhy.	—	52	52	—	354	860
C M Fire Retardant	—	—	—	—	—	54
Lead Acetate Wh. Flake	—	10	—	—	163	—
Magnes Metal Pickling Agent	—	15	15	—	—	131
Salabar	—	—	—	—	67	86
O S & Soda	—	—	—	—	9	69
Sodium Thiosulfate Pen Crystal	45	20	—	—	—	—
Sodium Thiosulfate Reg. Crystal	137	231	255	328	428	418
Sodium Metasilicate Reg.	2,036	3,685	4,612	8,180	6,313	11,507
Sodium Metasilicate, Fines	—	—	—	9	—	—
Sodium Nitrite U.S.P.	—	35	—	132	—	—
Di Sodium Phosphate Anhydrous	—	—	—	—	—	66
Di Sodium Phosphate Anhydrous Gran.	—	100	—	—	—	22
Trisodium Phosphate	3	43	14	205	—	—
Trisodium Phosphate, Bin-e	1,308	2,829	4,213	4,915	5,317	7,774
Trisodium Phosphate H.M.	—	—	—	—	382	2,093
Trisodium Phosphate Powder	—	—	—	—	—	44
Trisodium Phosphate Powder, Flake	—	—	—	—	—	44
Tetra Sodium Pyrophosphate	—	60	—	—	—	—
Tetra Sodium Pyrophosphate Granular	7	—	87	—	—	—
Tetra Sodium Pyrophosphate Anhydrous Granular	—	139	712	2,755	466	868
Sodium Sulfate, Very Fine Grade	16	49	—	—	—	—
Glaubers Salt, Granular	173	241	412	572	—	753
Glaubers Salt #7 Granular	—	—	—	—	624	—
Sodium Sulfide Concentrate Flake	—	6	—	14	511	446
Sodium Sulfide Concentrate Broken	—	—	—	—	50	—
Sodium Sulfite Crystal Technical	—	—	—	59	—	—
Tin Crystals	—	26	—	102	39	55
Sulfamic Acid	—	1	—	72	1,872	2,784
Sulfamic Acid Powder	—	—	—	—	30	—
Zinc Ammonium Chloride, Non-Foaming	—	—	—	—	—	28
Zinc Ammonium Chloride	—	—	32	365	—	—
Soldering Flux	—	14	—	—	—	—
Soldering Flux F.S. 1010 Fisher Body Spec.	305	1,405	2,091	2,245	175	—
Soldering Flux Eureka #41	53	108	28	—	419	663
Soldering Flux Eureka #55	1,656	771	51	22	1,783	2,248
Soldering Flux, Eureka #150	36	—	—	—	—	—
Soldering Flux, #1862-M	—	—	151	256	—	—
Soldering Flux, #1863-M	260	—	—	—	—	—
Soldering Flux, H.H Speed 50°	—	—	—	—	150	—
Soldering Flux, T.E. 40°	24	19	28	18	—	—
Soldering Flux Eureka Crystal	229	198	160	120	707	62
Zinc Chloride, Granular	441	730	2,702	2,864	2,420	4,821
Zinc-Chloride Solution 50°	249	147	—	—	—	89
Zinc Chloride Solution 50%	—	—	—	49	102	342
Zinc Chloride Solution 53°	—	—	—	—	53	—
Zinc Chloride Solution 70°	—	—	—	—	1,481	—
Cut Acid Flux 53°	178	—	—	—	—	—
Soldering Flux Kleanrol Crystal	—	—	—	—	375	1,112
Kleanrol #M29 Crystal	707	732	883	1,004	—	811
Tinning Flux, F.S. 1010	6	24	29	18	—	—
Tinning Flux, High Speed 50°	—	—	—	—	50	—
Zinc Sulfate Crystal 22%	—	—	—	—	83	—
Sodium Silicate F	180	254	270	208	335	577
Sodium Silicate J.W.	445	437	767	836	689	877
Sodium Silicate Q46	75	25	3	31	57	77

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Attachment "B-2"
Page 3.

Adhesives

Bauer and Black
Buromin Co.
Flintcote Co.
Forbes Varnish
B.F. Goodrich Co.
Hagan Corp.
Intercoastal Paint Corp.
Minnesota Mining and Mfg. Co.
J.W. Mortell Co.
Press Tite Engr. Co.

Rinshed Mason Co.
St. Clair Rubber
Std. Electric Co.
Superior Insulating Tape Co.
Swift and Co.
Vibra Damp Corp.
Cooke Paint and Varnish Co.
Van Cleef Bros.
Pittsburgh Paint and Glass Co.

FABRICS

Imitation Leather

Textileather Corp.

Coated Fabrics

Backstay Welt Co.
George R. Carter Co.
Federal Leather Co.

Goodall Fabrics
Haartz Auto Fabric Co.
Textile Corp.

Air Brakes

Wagner Electric Co.

Midland Steel Products

Automotive Brakes and Parts

Ainsworth Mfg. Co.
American Chain & Cable Co.
Brever Tritchener Co.
Flannery Bolt Co.
Flex-O-Tube Co.
Green Bay Drop Forge
Houdaille Hershey Co.
Auburn Heights Mfg. Co.
W. E. Du Bard

Dana Corp.
Youngstown Metal Products
Lamson & Sessions
Allied Parts Corp.
National Cold Forging Co.
Eaton Mfg. Co.
Accurate Spring Co.
Barnes, Gibson, Raymond Co.
Quality Spring Products Co.

Carburetors and Parts

Carter Carburetor Co.

Dix Auto Electric Service

Brake Lining

American Brake Shoe Co.
Asbestos Mfg. Co.
Thermoid Co.

American Brake Block Co.
Raybestos - Manhattan

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Tires and Tubes

B. F. Goodrich Co.
Goodyear Tire & Rubber Co.
MacGregor Tire
Firestone Tire & Rubber Co.
General Tire & Rubber Co.

Goodall Rubber Co., Inc.
Eagle Tire Co.
Bielfield Tire Co.
Dayton Tire & Rubber Co.
Seiberling Rubber Co.

Attachment "B-3"

(5000)
The following reflects some of the major subsidiary companies, divisions and departments of E. I. du Pont de Nemours & Co. and Bendix Aviation Corp., purchases from whom, are not to be included in your purchases from competitors:

E. I. du Pont de Nemours & Company

Ammonia Department
Electrochemicals Department
Explosives Department
Fabrics Department
Finishes Department
Grasselli Chemicals Department
Organic Chemicals Department
Photo Products Department
Pigments Department
Plastics Department
Rayon Department

Bendix Aviation Corporation

Bendix Radio Division
Bendix Aviation Research Laboratories
Bendix-Westinghouse Automotive Air Brake Company
Bendix Products Division
Eclipse-Machine Division
Eclipse-Pioneer Division
Friez Instrument Division
Marshall-Eclipse Division
Magnesium Foundry Division
Pacific Division
Red Bank Division
West Coast Sales and Service Division
Zenith Carburetor Division
Scintilla Magneto Division
Hydraulic Brake Company
Skinner Purifiers Division

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HASEFELT CHEMICALS DEPARTMENT (CONT'D)

(P.5344)

1938

1939

1940

1941

1946

1947

Products

Sodium Silicate #9	-	98	13	-	-	35
Sodium Silicate #14	-	38	32	11	(or) 44	-
Electroplating Equipment	61,947	-	-	-	-	-
Acetone	--	--	--	--	56	-
Methyl Acetone AAA	--	--	53	--	--	-
Aluminum Stearate	--	--	--	--	--	23
Ammonium Alum Lump	--	--	--	--	--	26
Aluminum Sulfate Ground	25	--	--	--	62	40
Aluminum Sulfate Lump	-	63	84	167	138	212
Ammonium Carbonate Lump	--	--	--	--	--	18
Ammonium Carbonate Powder	--	--	--	--	--	12
Ammonium Chloride White	1,987	1,912	480	384	--	--
Ammonium Chloride W. F.	118	149	244	30	27	76
Ammonium Nitrate Technical	--	--	27	86	73	63
Ammonium Nitrate C.P.	--	--	6	--	--	-
Di Ammonium Phosphate	54	--	5	--	--	15
Di Ammonium Phosphate Crystal	--	--	--	9	--	15
Di Sodium Phosphate	--	--	--	39	--	-
Ammonia Sulfate Purified	--	--	--	--	--	-
Arsenic White	1	--	--	--	--	4
Barium Carbonate	1	--	6	--	--	2
Barium Carbonate Ceramic	--	--	--	--	6	-
Barium Carbonate Free Flow	--	--	--	3	--	-
Barium Hydroxide	--	--	--	--	9,337	-
Blanc Fixe	--	--	--	74	--	-
Copper Sulfate	25	332	--	--	--	-
Copper Sulfate Crystals	48	293	304	471	--	-
Copper Sulfate Small Crystals	24	28	22	282	328	439
Copper Sulfate Large Crystals	--	--	--	--	66	-
Borax Granular	--	--	3	--	--	-
Borax Powder	--	--	17	10	7	24
Boric Acid	17	--	--	--	--	-
Boric Acid Granular	--	24	--	23	1,443	-
Boric Acid Refined Granular	--	--	6	--	--	-
Boric Acid Powder	--	25	100	33	--	140
Calcium Chloride	109	--	--	--	--	--
Calcium Chloride Flake	13	21	87	--	36	49
Calcium Chloride Flake 77-80%	26	--	--	--	--	-
Carbon Tetra Chloride	278	2,207	2,019	3,132	--	-
Carbon Tetra Chloride 99.9%	2,294	1,429	2,147	4,275	--	-
Carbon Tetra Chloride C.P.	--	--	--	56	--	-
Liquid Chlorine	--	--	--	44	1,202	1,284
Copperas Granular	--	--	--	--	--	569
Orthodichlorobenzene	--	--	--	8	--	209
Hydrofluoric Acid 60%	--	16	154	294	187	-
Hydrofluoric Acid 52%	--	25	297	--	--	-
Hydrofluoric Acid 48%	--	--	84	717	--	12
Hydrofluoric Acid 30%	1,480	240	102	--	--	-
Hydrofluosilic Acid 29	--	22	--	--	--	-
Hydrofluosilic Acid 28	--	23	--	--	--	-
Chloride of Lime	128	16	--	--	72	-
Magnesium Fluosilicate Crystals	--	--	--	15	--	2
Kosom Salts	--	--	--	--	648	926
Other Chemicals	--	40	--	--	--	-

SNAIBELLI CHEMICALS DEPARTMENT (CONT'D)

(P.5345)

	1938	1939	1940	1941	1946	1947
<u>Products</u>					(or)10	
Potassium Dichromate Crystals	—	70	27	321	152	762
Potassium Dichromate Granular	--	--	--	--	--	109
Potassium Dichromate Powder	73	9	--	--	--	--
Potassium Carbonate	171	227	54	240	--	--
Potassium Chloride 98-100%	--	--	--	--	7	--
Caustic Potash	--	--	--	--	158	--
Caustic Potash Flake	--	--	--	175	9,176	12,435
Caustic Potash Round	--	--	--	399	--	--
Potassium Nitrate Granular	54	--	--	--	--	--
Potassium Permanganate	--	--	--	--	--	11
Potassium Permanganate U.S.P.	--	--	5	--	90	56
Bal Soda	10	42	86	--	--	--
Bal Soda Lump	136	--	--	--	--	--
Soda Ash Light 58%	13	--	85	12,048	892	4,768
Soda Ash Fluffy 58%	--	--	--	497	1,991	--
Soda Ash Flake 58%	--	--	--	2,440	--	--
Sodium Acetate Anhydrous	--	--	--	--	70	344
Sodium Acetate Flake	6	31	60	108	93	--
Sodium Bicarbonate Technical	3	3	--	44	213	288
Sodium Bicarbonate Granular	--	--	--	--	--	50
Sodium Bicarbonate Pure	--	6	3	--	--	--
Sodium Bicarbonate Powder U.S.P.	3	--	--	--	7	3
Sodium Dichromate	28	24	39	78	2,015	7,749
Sodium Dichromate Crystals	--	219	--	--	94	253
Sodium Dichromate Granular	--	--	--	--	2,022	2,754
Sodium Bisulfite Anhydrous	--	--	--	--	54	63
Sodium Bisulfite Powder	7	--	17	149	--	--
Caustic Soda Flake	890	217	135	192	459	565
Caustic Soda Flake A	--	--	--	--	266	266
Caustic Soda Flake E	--	--	960	2,088	28	402
Sodium Nitrate Commercial	275	240	418	369	239	276
Sodium Sulfate Anhydrous	8	--	--	--	--	184
Sodium Sulfite Anhydrous	4	--	--	--	29	75
Sulfur Flour	--	22	78	321	60	11
Sulfur Powder	--	3	--	--	--	--
Sulfur Flowers	--	6	--	--	--	--
Sulfur Roll	5	4	--	--	21	--
Antu	--	--	--	--	85	42
Ammate Weed Killer	--	--	--	--	63	63
Deenol 5-H	--	--	--	--	--	40
Lime Sulfur Solution	--	--	--	--	(or)65	--
Zinc Dust AAA	--	4	16	65	--	--
Zinc Dust AA	--	--	--	--	145	78
Slick Anodes	--	18	--	--	--	--
H. & S. Test Solution	--	--	2	--	--	--
Acetic Anhydride 96%	90	380	393	444	--	--
Cadalyte	193	--	--	--	--	--
Cadalyte 38°	420	--	--	--	--	--
Cadalyte 39°	900	427	585	--	--	--
Cadalyte Brightner	--	--	16	109	--	--
Cadalyte Maintenance Compound	25	50	125	325	--	--
Cadmium Anodes	1,504	1,111	290	434	--	--
Anode Baskets	--	20	171	--	--	--
Cadmium Oxide	--	80	127	5	--	--
Cadmium Sponge	--	--	14	--	--	--
Lead Zinc Zinc Oxide	714	227	286	281	--	--

THE DATA IN THIS REPORT IS INTENDED ONLY
FOR THE PARTY TO WHOM ADDRESSED.
THE REPORT SHOULD BE TURNED OVER TO
THE SECRETARY IMMEDIATELY AFTER THE MEET-
ING AT WHICH IT IS CONSIDERED (Stamp)

August 19, 1921.

To: DIRECTORS—E. I. DU PONT DE NEMOURS & Co.

FROM: MR. J. J. RASKOB.

GENTLEMEN:—

The enclosed history of the Du Pont Company's investment in the General Motors Corporation (Exhibit -I) is very full and has been prepared with a great deal of care by Mr. Echols, Assistant Treasurer.

We decided to invest in this industry in December 1917 and completed an initial investment of \$25,000,000. early in 1918. In 1919 this investment was increased to \$45,182,000; in 1920 to \$47,532,000; and in 1921 to \$75,581,000.

The report (Exhibit-II) shows that the average cash return, in the way of dividends, on our investment during the three years (1918-1919 and 1920) was 12.34%, with average earnings equal to 36.8% on the investment and at the present time the book value of General Motors shares is \$15.75 per share as against an average cost to us of \$10.27 per share for the 7,362,540 shares, which we now hold.

As the Directors know we are now in control of the company and are completely responsible for its politics and management and our voting strength may be summarized as follows:

CHASELLI CHEMICAL DEPARTMENT (CONT'D)

(P.5346)

	<u>1938</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1946</u>	<u>1947</u>
<u>Products</u>						
Lead Anodes	206	-	127	-	-	-
Moly black salts A	-	135	416	630	-	-
Moly black salts B	-	735	2,235	2,782	-	-
Nickel Anodes	--	127	-	-	--	--
Nickel Salts Double	--	--	14	-	--	--
Zinolyte Addition Agent O	330	22	174	3,052	--	--
Zinolyte Anodes	311	--	--	--	--	--
Zinolyte Brightner	2,310	3,895	4,203	24,771	--	--
Zinolyte salts	--	210	4	3,795	-	--
Zinc Dust Double B	--	--	--	--	22	--
Electroplating Chemicals	13,512	22,445	17,954	5,881	304,180	261,419
Total	<u>1351.875</u>	<u>6430.543</u>	<u>578.799</u>	<u>71.487</u>	<u>830,011</u>	<u>81,082,733</u>

Preferred and debenture stocks outstanding, (which are non-voting) approximately \$100,000,000—

Common stock outstanding	20,477,734 shares
du Pont Company Holdings.....	6,882,108 "
Chevrolet Company Holdings (this company is controlled by duPont Co.)	2,001,091 "
DuPont—Nobel Holdings	400,000 "
Canadian Explosives, Ltd.....	258,243 "
Nobel Industries	609,425 "
Bonus Custodian	11,213 "
Savings & Investment Fund.....	228,958 "
J. P. Morgan & Company.....	516,887 "
TOTAL.....	10,907,925 "

—2—

On July 11th the Company had 43,000 common stockholders, (representing an increase of 5,000 in three months) and about 23,000 preferred and debenture stockholders, making a total of approximately 65,000 stockholders. The present condition of the company is well set forth in our Report to the New York Stock Exchange as of June 30th, 1921 copy of which is attached hereto (Exhibit-IV).

It is interesting to note the relation of our investment in General Motors Corporation to our total investment and

Mr. Exhols had prepared statements which show that Du Pont Company has a total investment, ex- cluding good-will, of	\$251,800,000
Of this, the amount invested in General Motors is	<u>75,600,000</u>
Leaving the total of all of our other invest- ments.	\$176,200,000

An estimate of probable future earnings of the Du Pont Company on its total investment in other than General Motors Corporation, over say the next three years, is attached. (Exhibit -III) which shows a return of 6%. I understand it is the feeling of the Executive Committee that it will be difficult to realize the figures shown in this estimate as an average over the next three years, but, of course, this is a matter of opinion. It is the writer's belief that we should in some way or other be able to earn at least 6% on our investment.

A statement is also attached (Exhibit -III) showing:

- (A) If General Motors Corporation earns \$58,100,000. (equal to 10% on its gross assets) the du Pont Company's portion will be \$17,200,000.
- (B) If General Motors Corporation earns \$72,638,000. (equal to 12½% on its gross assets) the du Pont Company's portion will be \$22,421,000.
- (C) If General Motors Corporation earns \$87,200,000. (equal to 15% on its gross assets) the Du Pont Company's portion will be \$27,700,000.

Using the data as contained in these statements, the relative investment of the Du Pont Company in General Motors, VS, its total investment in all other properties and the relative amount of earnings accruing to it from these sources, under varied assumptions, may be stated as follows:

ESTIMATED EARNINGS

du Pont Co's Investment In	Du Pont Co. @ 6% on Assets in Mfg. & all other than Gen. Motors Investment; Gen. Motors @ 10% on its Gross Assets.	DuPont Co. @ 8% on Assets in Mfg. & all other than Gen. Motors Investment; Gen. Motors @ 12 1/4 % on its Gross Assets.	DuPont Co. @ 10% on Assets in Mfg. & all other than Gen. Motors Investment; Gen. Motors @ 15% on its Gross Assets.
General Motors Corp. Stock	\$75,600,000*	\$17,200,000*	\$22,421,000*
Manufacture & All other than Gen. Motor Stock	176,200,000*	10,640,000*	14,096,000
TOTAL	\$251,800,000*	\$27,840,000	\$36,517,000
Less:			
Bond Interest (\$35,000,000-7 1/2% Bonds)	\$ 2,650,000		
Preferred Dividend @ 6%	4,270,000		
Total Charges	\$ 6,920,000	\$ 6,920,000	\$ 6,920,000
Balance available for Common Stock	\$20,920,000	\$29,597,000	\$38,400,000
Equals % on du Pont Common Stock (\$63,378,300)	33%	46.7%	60.5%

* These figures are brought forward from Exhibit III.

J. J. RASKOB.

NOTE. "Return to Executive Committee Room 9069"
is stamped at top and bottom of first page of document.

(3071)

Government's Exhibit No. 1346



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED 1802
WILMINGTON, DELAWARE

September 24, 1936

LEGAL DEPARTMENT

MR. W. S. CARPENTER, JR.,
VICE PRESIDENT.

I am returning your memorandum to Finance Committee dated September 18th.. A short memorandum is attached with two suggestions.

C. A. Mudge

Director.

CRM:T

(3072)

Suggested substitution for first new paragraph on page 5.

In considering the acquisition by du Pont Company of a further large stock holding in General Motors Corporation, which would increase our earnings from securities to a point in excess of one-half of our total earnings, and which would not only substantially increase the stock control of the latter by the former company, but would also apparently greatly strengthen the character of such control as a result of the managers of General Motors Corporation becoming important stockholders of du Pont Company, the Committee might well give attention to the legislative trend of recent years with respect to holding companies and various forms of intercorporate control, and consider whether or not such action on our part might direct critical public attention to the nature and potentialities of such a relationship between the two companies.

Suggested substitution for first sentence on page 9.

The concensus of opinion is that no general revision of taxes can be accomplished before March 1, 1957, and that, therefore, the tax on intercorporate dividends will be in effect at least covering the year 1956. With a change in administration it seems probable that this tax will be eliminated.

4 2445

GENERAL MOTORS CORPORATION

BROADWAY AT 57TH STREET
NEW YORK, N.Y.

December 27, 1933

Mr. Lammot duPont,
E. I. duPont deNemours & Company,
Wilmington, Delaware.

RE: GENERAL MOTORS CORPORATION

My dear Lammot:-

We were discussing this afternoon the constitution of the Executive Committee and, naturally, the subject came up of your desire to withdraw from the activities of that Committee.

I am not going to repeat to you what I have said so many times -- that we are accepting this under protest -- but I want to again register the thought that we very much regret it because, outside of the personal relationship, which is so very, very pleasant, we will miss the support of your attendance and the opportunity that it gives you of knowing what we are doing; how we are doing it, etc.

The purpose of this letter is to ask whether it would be your pleasure for us to extend the invitation to Walter. Everybody thinks very highly of Walter's judgment; he has always been interested in our problems, and we would like very much to have him join the Committee and continue the relationship just as you have, if that should appeal to Walter and yourself.

I recognize that the principle you have in mind would apply to Walter just as much as it does to yourself, and that is the reason why I haven't advanced it before, but in the hopes of trying to accomplish something in the direction we all think is desirable, I am advancing it at this time specifically. If this should be acceptable to Walter and yourself, there is no reason why it should interfere with the presentations we are arranging to make to such group in Wilmington as you may wish to get together from time to time to deal with same.

Very truly yours,

(5074)

A. P. T. / wauf.

FABRICS INDUSTRIAL MASTER TRADE REPORT

Customer Fisher Body - Div. of General Motors
St. & No. General Motors Bldg.
City - Zone Detroit 2
County - State Wayne, Mich.
Persons Interviewed R.F. Oliver, V. Fisher, etc.

B. C. 23
Class . 1
Report No. 237
Salesman , T. A. Nalle
Date of Call 11/29 - 12/6/46

Copies To:

High ✓ 5.
eld 6.
ork 7.
8. ?

1. Associated Companies, Affiliations, Subsidiaries and Branches Division of General Motors, with numerous assembly branches
All productive materials purchased at Central

2. General type of business Office, Detroit

Manufacturer

3. Products made from our type materials _____
Upholstery and trim for automobiles and trucks.

4. Indicate (in order of importance) firm buys on: Friendship 1 Price 4
Quality 2 Service 3.

5. Attitude toward du Pont. Favorable

6. Our prospects for regular business

Good

- 7. Names and titles of individuals to receive mailings and du Pont Magazine.**

**Check (x) For
du Pont Magazine**

Name	Title
1. <u>F. J. Walker</u>	Purch. Agent
2. <u>Vern Fisher</u>	

- 8. DU PONT SALES (yards)**

Newburgh

Fairfield

1946 (9 mds.)

1945 (12 mos.) 63,390

9. Other Remarks on Back.

Est. Annual Consumption du Pont and Competitive Products

PYROXYLIN COATED FABRICS & PAPER

Quality & Width	Price	Manufacturer	Supplier	Yards
6950 - 50"		Du Pont	Same	410,000
4000-4500-4502		"	"	150,000
2251-55" & 50"		"	"	185,000
Broken Twills		Textileather	"	115,000
Sateens		"	"	80,000
Drills		"	"	85,000
Broken Tw' ls		Federal	"	30,000
Sateens		"	"	45,000
Drills		"	"	25,000

RUBBER (NATURAL & SYNTHETIC) COATED FABRICS & SHEET STOCK

RESIN COATED FABRICS & SHEET STOCK

"Fabrilite" Tolex	Du Pont Textileather	Same Same	65,000 10,000
----------------------	-------------------------	--------------	------------------

What is the potential yardage of this firm if raw materials were available?

2,500,000

• Based on to date 1946 purchases.

The consumption figures shown on the other side of this sheet are based on the production of 700,000 passenger cars in 1946 and the usage of 1.6 yards per car.

Since post-war production was resumed, we have received orders totalling 2,760,000 yards. This amount is broken down as follows:

"Fabrikoid" (without listing substitutes)

6950	Quality - broken twills	1,040,300
4000	"	294,100
2251	" - 55" and 58"	480,700
4500	" (sedan delivery head lining)	62,000
4502	" (convertible trim)	78,000

"Fabrilite"

7030 or 6028	(trim for sedan deliveries	54,750
4022	and taxicabs)	66,500

The shipments of the above started in mid-1945 and will continue until April-May, 1947.

Everything has been running along smoothly but it is very important to watch delivery schedules closely, unless of course current conditions force a shut-down.

Prices effective December 2 were submitted and have been accepted by Bob Olinger. In discussing these, he pointed out that on the red antique 4502 quality, our price was \$1.375 vs. Textileather \$.39, and on part 40-T-1242 (drill) our price was \$.74 versus Textileather \$.75. However, on the 4000 Spanish, Textileather quoted \$1.02 against our \$1.048. Olinger asked me to see if we were in a position to bring the \$1.048 figure more in line with competition. After talking to Mr. Doremus, I have informed him that we would like to keep it as is. He has accepted this.

Mr. C. E. Wilson has just announced that it is the present intention of General Motors to defer their plans for bringing out 1948 models in the late summer of 1947 on all the cars except Buick and Cadillac. If this plan carries through, undoubtedly Buick and Cadillac will bring out new models, but the other lines will continue on the 1947 models to be brought out in early 1947 until some undetermined date.

520



FABRICS INDUSTRIAL MASTER TRADE REPORT - Correspondent's Copy

Received for Typing 2/24/48
Date Typed 2/25/48

Customer Fisher Body Div. - General Motors Corp.
St. and No. General Motors Building
City - Zone Detroit 2
County - State Wayne, Michigan
Persons Interviewed Mr. F. J. Walker

B.C. 23
Class 1
Report No. 23
Salesman T. A. Nalle
Date of Call 2/17/48

COPIES TO:

1. Newburgh 5.
2. Fairfield 6.
3. ALB 7. E.D.
4.

FEB 27 1948

1. Associated Companies, Affiliations, Subsidiaries and Branches Division of General Motors Corp. manufacturing passenger bodies for all Divisions, station wagon bodies for Chevrolet, and light delivery bodies for Chevrolet.

2. General type of business Manufacturer.

3. Products made from our type materials Automotive upholstery and trim.

4. Indicate (in order of importance) firm buys on: Friendship 4 Price 3

Quality 1 Service 2

5. Attitude toward du Pont: Very satisfactory.

6. Our prospects for regular business.

Good.

7. Names and titles of individuals to receive mailings and du Pont Magazine.

Name	Title	Check (x) For du Pont Magazine
------	-------	--------------------------------

1. Fred Walker	Purch. Agent	X
2. Vern Fisher, Dir.-Trim Fabric		X
3. Stds. & Spec. Sec.		
4.		

8. DU PONT SALES (yards) (All locations.)

Newburgh	Fairfield
1947 (12 mos.) 1,852,501	127,932
1946 (12 mos.) 1,131,364 (incl. 79,641 Grand Rapids Stamping)	

9. Other Remarks on Back. 1947 Total: 1,980,433

Est. Annual* Consumption du Pont and Competitive Products

PYROXYLIN COATED FABRICS AND PAPER

Quality and Width	Price	Manufacturer	Supplier	Yards
6950		Du Pont	Same	1,100,000
4502		"	"	110,000
4000		"	"	240,000
2251		"	"	320,000
3500		"	"	80,000
21 oz. B.T.		Textileather	"	300,000
22½ oz. Sat.		"	"	125,000
17½ oz. Sat.		"	"	75,000
2.25 Drill		"	"	125,000

PYROXYLIN COATED FABRICS AND PAPER STOCK

21 oz. B.T.	Federal	Same	200,000
22½ oz. Sat.	"	"	15,000
17½ oz. Sat.	"	"	50,000
2.25 Drill	"	"	100,000

RESIN COATED FABRICS AND SHEET STOCK

6028 "Fabl."	Du Pont	Same	70,000
4025 "	"	"	58,000
Tolex	Textileather	"	25,000
20 ga. Unsupported (*)			25,000

What is the potential yardage of this firm if raw materials were available?

* Goodall, Goodrich and Textileather thru Fabricon.

(OVER)

* Based on 1946 purchases.



All details have been covered in letters, etc.

Production is being maintained at a fairly even rate. There are no immediate prospects for improvement.

We have had under discussion the question of changing the 4502 "Fabrikoid" to 4502 "Fabrilite".

The Engineering Department is working on a 1949 Chevrolet station wagon body, and has requested a sample of 59" material embossed in a wood grain, light tan color. The "Fabrikoid" sample has been delivered and the "Fabrilite" is expected shortly from Newburgh. If this idea is adopted, very probably a design will be wanted simulating birch or maple, instead of the Native Oak.

We have done some work on the use of 3020-U for arm rests, which are purchased by Fisher cut to shape. We are not equipped to do this so I have interested Bob Connolly, who represents Western Leather Company of Milwaukee. They are equipped and interested, and already supply some leather items such as straps for convertibles, etc. to Fisher.



FABRICS INDUSTRIAL MASTER TRADE REPORT - Correspondent's Copy

Received for Typing 10/18/48
Date Typed 10/19/48

CC
CTJ
C79

Customer Fisher Body Div., General Motors Corp.

St. and No. General Motors Building

City - Zone Detroit 2

County - State Wayne, Michigan

Persons Interviewed F. J. Walker

B.C. 23

Class 1

Report No. 168

Salesman T. A. Nalle

Date of Call 10/18/48

COPIES TO:

1. NBG.	5. FLC.
2. TA	6. EJB
3. ALB	7.
4. TAN	8.

1. Associated Companies, Affiliations, Subsidiaries and Branches Division of General Motors Corporation.

2. General type of business Manufacturer of passenger bodies for all Divisions, station wagon bodies for Chevrolet, Pontiac and Oldsmobile, and light delivery bodies for Chevrolet.

3. Products made from our type materials Automotive upholstery and trim.

4. Indicate (in order of importance) firm buys on: Friendship 4 Price 3

Quality 1 Service 2

5. Attitude toward du Pont. Very satisfactory.

6. Our prospects for regular business.

Good.

7. Names and titles of individuals to receive mailings and du Pont Magazine.

Name

Title

Check (x) For
du Pont Magazine

X

1. F. J. Walker

Purch. Agent

2. Vern Fisher, Dir.-Trim Matl. Stds.

X

& Spec. Section

3. (Jack Cronin, General Manager, recently succeeded L. C. Goad.)

4. DU PONT SALES (yards)

Newburgh

1948 (8 mos.) 1,273,096

1947 1,851,270

Fairfield

None provided.

5. Other Remarks on Back.

PPMIA-SM-5-47 □

Est. Annual* Consumption du Pont and Competitive Products

Quality and Width	Price	FEDERAL		
		DU PONT	TEXTILEATHER	LEATHER
6950-50"	Contract	556,000	185,000	90,000
4000-50"	"	134,400	45,000	22,000
4502-50"	"	76,800	30,000	15,000
3500-55"	"	53,000	-	-
SWH-1-59"	"	18,000	-	-
2251-55"	"	160,000	55,000	22,000
		Vinyl Resin Coated		
Fabt. 6950-50"	Contract	330,000	110,000	55,000
6959-61-7030	"	35,000	12,000	7,000

RUBBER (NATURAL AND SYNTHETIC) COATED FABRICS AND SHEET STOCK

4000-50"	"	70,000	25,000	12,000
4001-55"	"	5,000	-	-
4502-50"	"	257,000	95,000	50,000
4022-25	"	37,000	-	-
6028	"	32,000	-	-
755-54"	"	1,300	-	-

TOP MATERIALS (SYNTHETIC) COATED FABRICS AND SHEET STOCK

Teal - 56"	Contract	85,000	490,000
Bow Lining	"	37,000	250,000

What is the potential yardage of his firm if raw materials were available?

(over)

June 16 1945

* Based on 1946 purchases.



5359

All figures based on orders placed to date plus estimate of those to be placed to December 31.

Pyroxylin in 0950 and 4000 discontinued beginning with 1949 model orders.

Pyroxylin in 4502 discontinued in April and replaced by vinyl coatings.

6028 and 4025 will not be used in '49 models--replaced by 30 oz. 1.14 broken twill and 50" sateen in 0-11 grain.

Textileather purchased through Automotive Materials Company--others direct.

Unsupported sheet previously reported for arm rests has been replaced by 21 oz. broken twill. Arm rests are made by Fisher Carpet Co., Norwalk, Ohio.

3883

C O P Y

FABRICS INDUSTRIAL MASTER TRADE REPORT

Customer Chevrolet-Indianapolis (formerly Chev.-B.C. 23
St. & No. Holly & Henry Sts. Commercial Body Class 1
City - Zone Indianapolis 6 Report No. 224
County - State Marion, Ind. Salesman T. A. Nalle
Persons Interviewed Mr. Pugh Gen. Mgr.; Carlen, P.A.; Gleason, Date of Call 10/29/46
Asst. P.A.; Schwengei, Eng.; Lowe, Matl. Cont.; Ralph
Smith, Serv. Matl. Cont.; Ed. Mertz on sick leave.

1. Associated Companies, Affiliations, Subsidiaries and Branches _____
Division of General Motors Corp.
 2. General type of business Manufacture truck bodies
(knocked down) for Chevrolet
 3. Products made from our type materials Truck upholstery and
trim.
 4. Indicate (in order of importance) firm buys on: Friendship 1 Price 1
Quality 1 Service 1. All about equally important
 5. Attitude toward du Pont. Favorable
 6. Our prospects for regular business.
Excellent

7. Names and titles of individuals to receive mailings and du Pont Magazine.

Name	Title	Check (x) if du Pont Magazine
1. <u>L.J. Carlen</u>	Purch. Agent	X
2. <u>E.H.Mertz</u>	Eng. Dept.	X

8. DU PONT SALES (yards)	Newburgh	Fairfield
1946 (9 mos.)	111	
1945 (12 mos.)		58,374

9. Other Remarks on Back.

~~FF4600A-AM-846-SR2B29~~

Copies To:

- | | |
|-----------|----|
| 1. ALB-ED | 5. |
| 2. HDMCL | 6. |
| 3. | 7. |
| 4. | 8. |

Est. Annual* Consumption du Pont and Competitive Products

PYROXYLIN COATED FABRICS & PAPER

RUBBER (NATURAL & SYNTHETIC) COATED FABRICS & SHEET STOCK

RESIN COATED FABRICS & SHEET STOCK

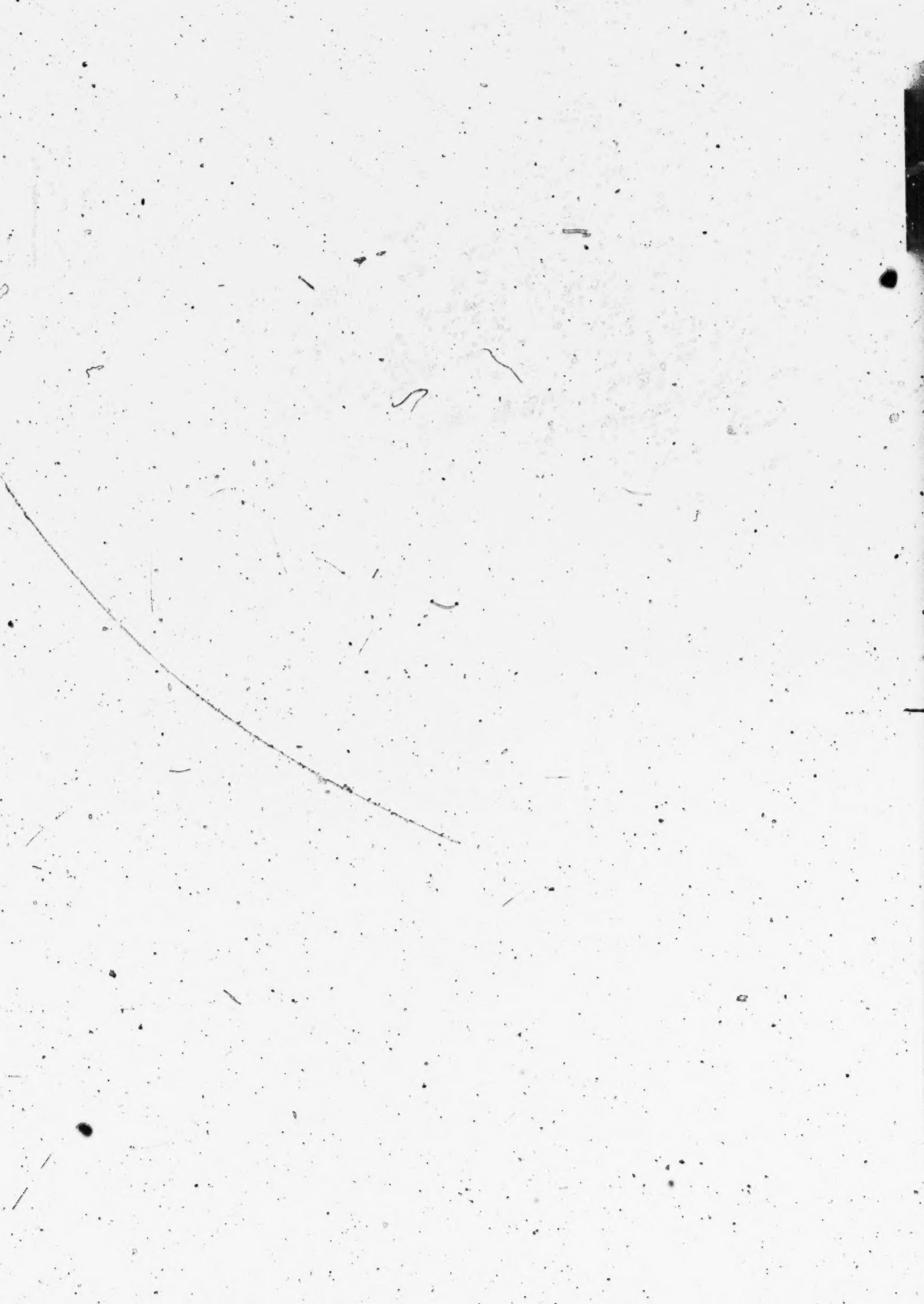
6028 50"	Contr.	Du Pont	D.S.	900,000
<u>Naugahyde</u>	"	U.S.Rubber	"	100,000
Headlining	-	Not placed	?	10,000

What is the potential yardage of this firm if raw materials were available?

1,500,000 yards

• Based on to date 1946 purchase

EE-MRRA-2A-MA-SB2B29



5361

Saw Messrs. Pugh, General Manager; Carlen, P.A.; Dan Gleason, Asst. P.A.; Schwengel, Eng.; Lowe, Material Control; Ralph Smith, Service Material Control and Ed. Mertz on sick leave.

Construction of extensive plant addition and new office coming along slowly.

Will probably need new red color part 3676062 for February delivery for March fabrication in Indianapolis and April use in the assembly plants.

In the meantime, Lowe says he is running quite close and hopes Fairfield can keep up to schedule. He may have to place additional releases against present color. On the last release, when we received approximately 100,000 yards, U.S. received 6,000, which they cannot ship until late November (have had strike trouble), and Textileather 2,000, which has been on order for about a year.

Questioned Carlen about a contract on the drill number, part 3676063, says this was placed with two other sources, as we were just under ten per cent higher than anyone else on this one. He will continue to check prices after production gets underway.

Ralph Smith has not yet succeeded in getting an Engineering O.K. on the narrow duck at Fairfield for the service order.

Schwengel will need a 54" headlining to go with the attached metal color. (Sample with E. Doremus' copy) in suburban bodies. Perhaps a 16 ounce drill pyroxylin coated will be O.K. Solid color satisfactory if Newburgh can provide a color, or if you prefer, they would take a P.C. job - Newburgh or Fairfield.

Carlen will have to buy some Osnaburg or sheeting for use in the grey in the seat construction. He will appreciate advice from Purchasing Department as to sources from which this might be purchased.

3082



FABRICS INDUSTRIAL MASTER TRADE REPORT - Correspondent's Copy

Received for Typing 1/19/48
Date Typed 1/19/48

Customer Chevrolet-Indianapolis, Div. of General Motors C. 23
St. and No. 340 S. White River Pkwy., W. Dr. Class 1
City - Zone Indianapolis 6 Report No. 3
County - State Indiana Salesman T. A. Nalle
Persons Interviewed Messrs. Carlen, Schwengel, Mertz,
Lowe, Abrams, and Smith, Trim Foreman Date of Call 1/15 & 1/16/4

1. Associated Companies, Affiliations, Subsidiaries and Branches Part of
Chevrolet Division, General Motors Corp.

2 General type of business Manufacturer

3. Products made from our type materials Upholstery for truck cabs
and other types of commercial vehicles.

4. Indicate (in order of importance) firm buys on: Friendship 4 Price 5
Quality 2 Service 3

5. Attitude toward du Pont. **Favorable**

6. Our prospects for regular business

Excellent

7. Names and titles of individuals to receive mailings and du Pont Magazine

Name	Title	Check (x) For du Pont Magazin
L. J. Carlen	Purch. Agent	<input checked="" type="checkbox"/>
E. H. Mertz	Eng. Dept.	<input checked="" type="checkbox"/>

8 DU PONT SALES (yards)

3033 Newburgh
1947 (11 mos.) -
1946 (12 " .) 3

9' Other Remarks on Back.

FF4400A SM 9 46

Fairfield	Lbs.
<u>487,541</u> yds.	1910
535.013 "	3407

USE REVERSE SIDE FOR ADDITIONAL REMARKS, LEFT SIDE AS TO

What is the potential yardage of this firm if raw materials were available?

1,500,000

(OVER)

* Based on 1946 purchases.

Aug 1647



The two principal matters covered in this call, which included January 15 and 16 due to Mr. Carlen's absence on the 15th, were the complaint arising from defective grey goods and the change in schedule just received which showed no requirements from us for January and February.

The trouble with the defective grey goods should work itself out in time and will probably prove to be less costly by their cutting up the material and charging us for the extra labor and any excessive loss, than it would be to return the material to Fairfield for reinspection. A number of the roll tags have been forwarded to Fairfield. On several of these the number of cuts which they had to make was noted. These ranged from 7 to 21 on four or five rolls. I spent considerable time in the cutting room with Clyde Smith, the cutting foreman, and Fred Schwengel of Engineering. Some of the rolls were practically perfect and no cuts required. Then one would come up which had numerous defects and five or six cuts were necessary. The principal loss of material is in the splicing. Even though they use the short ends in the portion of the lay from which the smaller pieces are cut, there is always over-lap and as much as one to five yards may be lost in a particularly bad roll. The extra labor involved is required in the additional walking up and down the table to make the inspection and the time required for making the cut-outs and fitting the pieces into the lay.

I feel definitely certain that they are trying to handle it with the least possible additional labor as well as loss of material. Schwengel asked me to write him another letter authorizing this procedure on the last carload as my previous letter covered only the 15,000 yards in the first car in which the trouble was noticed.

Considerable time was also spent with the scheduling department on Thursday. I secured authorization to ship a car in January, which was confirmed by Carlen the next day. From information picked up it seems definite that U.S. material caused considerable trouble last Fall from crocking. A fair quantity of roll goods and some cushions already made up were returned to them. Prior to the call I had been informed that U.S. were on the way out and that we would secure a larger share of the business. The angle which I cannot reconcile is that in spite of the trouble they have had with the Naugahyde, Carlen has purchased a special lot from them. Details of this will be covered further on.

I pointed out to all concerned that the abrupt and unexpected change in schedule worked a great hardship on us, as it meant the possibility of laying off a calender crew which would be hard to reassemble when needed. Carlen said that whenever any changes they made worked any hardship we were to let him know and he would try to work out something for us; but that

(Cont'd.)



in this instance he felt we were probably busy and would welcome not having to make shipments to them for a while. I then explained that Fairfield had been more or less geared around their business and that on many occasions we had not gone after other business in order to be in a position to take care of them, mentioning the heavy production required last Fall. I will follow up in about a week to find out what the situation is and see if we cannot get another car for early February in addition to the one already authorized for January.

Several factors enter into the reduced schedule to us:

- (a) January production is not up to schedule and February is expected to be behind also due to steel shortage.
- (b) On the basis of their schedule dated 12/15/47, which was the last one prior to the one just received, dated January 10, 99,660 yards had been shipped on order 7040 up through 11/28. This schedule showed 10,000 yards more due prior to January 1. But in December we shipped 45,154 yards, which was actually 35,000-odd yards out of the then January schedule for 40,000 yards. They have no complaint on these shipments having been made ahead of schedule and, in fact, Fairfield has an excellent record for service. Actually, if these shipments had not been made, they would very likely have called for at least part of this yardage. I am merely citing this situation as it helps to explain the absence of requirements in January.
- (c) U.S. Rubber came to them with a special lot of cloth, I understand around 80,000 yards, to finish 43" wide. I am not sure whether they took the stand that they had purchased this in order to handle Chevrolet requirements or whether they merely stated that it was a special lot of cloth which they could not dispose of except to the surplus dealers, and offered it to Carlen at the same price they would have to sell it through such outlets. He said that Engineering tested the cloth and found that it was satisfactory, and that since the saving amounted to so much he did not feel justified in passing it up. It was his plan to take in all of this cloth in January and February and clean up the deal with U.S. (This is the first instance of this sort I can recall in all our dealings with General Motors.) In view of the hardship to us as set forth

(cont'd.)



in our conversation, they will most likely spread this material over a longer period and thus reduce the quantities which would otherwise have been taken from us in March and April.

In figuring their requirements by using their total cab production, it should be remembered that they are now making the cabs for GMC Truck but are not upholstering them, so that any Chevrolet-Indianapolis figures on cab production would include those for GMC for which we are shipping trim material to GMC at Pontiac.

I understand that Federal Leather are also now "making passes" at this upholstery business and have submitted samples. Cotan has been supplying the light weight headlining material for some time. On the last buy for headlining, Carlen placed the business with Federal (presumably they had a lower quotation than Cotan), but Federal were not notified immediately and when they called for shipments Federal could not supply, with the result that they had to go back to Cotan for additional quantities beyond their contract period.



Presented to Mr. Gleason the quotation form due today containing the prices outlined in Mr. Brown's letter of November 18. All prices were not expected to be in for several days. Landers had advised they would come down later in the week to present their figures.

I understand from lobby gossip that a great many firms are quoting on this business. It appears that the Engineering group have encouraged everyone to submit samples in the red combination, who are at all interested in doing so.

U.S. Rubber and Textileather were not sources for the last half of 1948. Every indication points to their making a determined effort to get back in. Mr. Green of Textileather was there during my visit. Also, Goodall, who supplanted them, will undoubtedly try to stay in the picture. Others who have probably put in quotations include Landers, Federal, Cotan and Athol.

As all quotations had not been tabulated, I could not develop any information whatever as to what their trend may be. I told Dan Gleason that I would get in touch with him on Friday, and he later asked me to defer this until Monday or Tuesday as he does not want to make a definite decision until Schwengel of the Engineering Department returns next week, so that he can discuss the situation with him. As you know, Mr. Schwengel has been following the matter of color, etc. very closely. Rather than take any chances on a possible slip-up, I plan to go back down there Monday morning.

The consumption figures for resin coated fabrics are all in the red Spanish, with the exception of the Federan item of 80,000 yards. This is the plain tan color, part 3676052, used on suburban bodies.

Under date of November 1 you made quotations on part 3806524 of \$1.12 and on part 3808698 headlining, 48", of \$.73. The first price was 18¢ high and the second one, 10¢.

Mertz remarked that they are still getting red-banded material but he could not say in which car this was found. I will obtain more information on this from Schwengel next week. Mertz also remarked that they were going to be extremely critical of the car scheduled to come out this week, as they understood it would contain the new and uniform color match as well as the improved grain. I hope it is good and, if not, that it does not arrive until the contracts are placed. I called

(cont'd.)

3990

Mr. Powers on the 'phone and suggested that if it was not loaded, it be deferred a few days as the schedule for the 22nd had now been moved back until the 29th. He reported that it was being loaded and so I suggested that he not hold it up.

In checking over a piece taken from the roll which they have retained and representing the standard recently given us, which is Goodall material, I noticed a smoky appearance and, on creasing, found that it showed a decided bloom. The sample retained here in the office, from the piece sent to Fairfield, does not show it as prominently. You might check the piece at Fairfield and see how it shows up, just as a matter of information.

Also advised Mr. Powers of a new order for 60,000 yards and a new schedule calling for 40,000 yards in January and 20,000 February 7.



FABRICS INDUSTRIAL MASTER TRADE REPORT - Correspondent's Copy

Received for Typing 7/11/47
Date Typed 7/11/47

Customer GMC Truck & Coach Div.-Gen.Motors Corp. B.C. 23
St. and No. South Boulevard Class 1
City - Zone Pontiac 11 Report No. 99
County - State Oakland, Michigan Salesman T.
Persons Interviewed Mr. E. H. Nelson Date of Call 7/

C. 23
lass 1
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alesman T. A. Nalle
ate of Call 7/8/47

COPIES TO:
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1. Associated Companies, Affiliations, Subsidiaries and Branches Division of General Motors Corporation, manufacturing trucks and coaches.

2 General type of business Manufacturer

3. Products made from our type materials Upholstery for trucks and trim for coaches.

4. Indicate (in order of importance) firm buys on : Friendship 4 Price 3

Quality 1 **Service** 2

5. Attitude toward du Pont. Very satisfactory.

6. Our prospects for regular business.

Good

7. Names and titles of individuals to receive mailings and du Pont Magazine.

	Name	Title	Check (x) For du Pont Magazine
1.	<u>E. H. Nelson</u>	Purch. Agent	<input checked="" type="checkbox"/>
2.	<u>Fred Hall</u>	Engineer	<input checked="" type="checkbox"/>
3.			<input type="checkbox"/>

8 DU PONT SALES (yards)

1947 (5 Mos.)	Newburgh
	<u>15,084</u>
1946	10,310

Fairfield
32,089
55,226

9. Other Remarks on Back.

FP4600A-SM, 9-46 □

Est. Annual* Consumption du Pont and Competitive Products

PYROXYLIN COATED FABRICS AND PAPER

RUBBER (NATURAL AND SYNTHETIC) COATED FABRICS AND SHEET STOCK

RESIN COATED FABRICS AND SHEET STOCK

6026 "Fabrl."	Contr.	Du Pont	Fairfield	75,000
Naugahyde	"	U.S.	Same	40,000
Redolite	*	Goodall	Same	30,000
6200 "Fabrl."	List	Du Pont	Newburgh	10,000

What is the potential yardage of this firm if raw materials were available?

Probably 25% above yardage shown.

June 1650

5373

Delivered Mr. Brown's letter relative to extension of blanket order to Mr. Nelson and discussed it with him. He is satisfied with the arrangement as set forth by Mr. Brown.

Are slowly getting started on new truck production, and have six pilot models on the production line. It will be a month or so before they are in real quantity production.

Received for Typing 1/9/48
Date Typed 1/9/48



FABRICS INDUSTRIAL MASTER TRADE REPORT - Correspondent's Copy

Customer GMC Truck & Coach Div.-General Motors Corp.
St. and No. South Boulevard
City - Zone Pontiac II
County - State Oakland, Michigan
Persons Interviewed Mr. E. H. Nelson

B.C. 23Class 1Report No. 2Salesman T. A. NalleDate of Call 1/7/48

COPIES TO:

<u>1. Newburgh</u>	<u>5.</u>
<u>2. Fairfield</u>	<u>6.</u>
<u>3. A.M.S.</u>	<u>7.</u>
<u>4.</u>	<u>8.</u>

1. Associated Companies, Affiliations, Subsidiaries and Branches Division of General Motors Corporation, manufacturing trucks and coaches.

2. General type of business Manufacturer.

3. Products made from our type materials Upholstery for trucks and trim for coaches.

4. Indicate (in order of importance) firm buys on: Friendship 4 Price 5
Quality 1 Service 2

5. Attitude toward du Pont Very satisfactory.

6. Our prospects for regular business.
Good

7. Names and titles of individuals to receive mailings and du Pont Magazine.

Name	Title	Check (x) For du Pont Magazine
<u>E. H. Nelson</u>	<u>Purch. Agent</u>	<u>X</u>
<u>Fred Hall</u>	<u>Engineer</u>	<u>X</u>
3.		
4.		

8. DU PONT SALES (yards)

Newburgh	Fairfield
<u>1947 (11 mos.) 18,462</u>	<u>71,145</u>
<u>1946 (12 mos.) 10,310</u>	<u>55,226</u>

9. Other Remarks on Back.

Est. Annual* Consumption du Pont and Competitive Products
PYROXYLIN COATED FABRICS AND PAPER

Quality and Width	Price	Manufacturer	Supplier	Yards
6200	List	Du Pont	Same	10,000
3000 LBC	"	"	"	2,000
Broken Twill	"	Goodall	"	3,000

E.D.JAN 12 1948

RUBBER (NATURAL AND SYNTHETIC) COATED FABRICS AND SHEET STOCK

JAN 12 19484. L. 4

RESIN COATED FABRICS AND SHEET STOCK

6026 "Fabrl."	"Contr.	Du Pont	Fairfield	75,000
Naugahyde	"	U.S.	Same	40,000
Redolite	"	Goodall	Same	30,000
6200 "Fabrl."	List	Du Pont	Newburgh	10,000

What is the potential yardage of this firm if raw materials were available?

20% above figures shown



5375

I understand the sample of D.C. "Fabrilite" curtain material is en route. It will be delivered immediately upon arrival.

See letter 1/9/48 to Mr. Costello regarding new shipping schedule for part 3676062.

They are planning to use considerable vinyl materials in a new coach, including "Fabrilite" type for side walls and a linoleum type for floor coverings.

They have a very fine new Engineering Building and considerably more laboratory facilities than previously. The laboratory is doing considerable test work but their personnel is quite inexperienced in the procedure for testing coated fabrics. I think it would be an excellent plan if when Dr. Vaala plans a trip in this section of the country, he could arrange to devote a half day to a general discussion of the value of the various tests, methods, etc., with several of the GMC Truck engineering and laboratory personnel. For example, they are using the Tabor abrader and their results are not too satisfactory or dependable. Incidentally, I have never received any information on the Tabor abrader situation covered in the last paragraph of T.R. #164 dated 12/3/47.

I would like very much to get into the heavy duty upholstery situation. Due to the continued scarcity of leather, their consumption of such material will be worthwhile. It is used in the heavier, more expensive truck models. You will recall that we had an order for this in December, 1946, in "Fabrilite" 7140, but could not provide a satisfactory color match. Consequently U.S. have been enjoying this business. I dislike to be continually asking for samples, but I think it is very important to attempt another match (laboratory sample) of their leather color, samples of which were furnished you.

They are now using Naugahyde 52" wide, weighing approximately 60 oz. per linear yard, made on a 11.46 60" duck. Nelson is of the opinion that this is somewhat heavier than actually required. Therefore I suggest that the construction you figure on for the laboratory sample represent Fairfield's idea of the minimum weight coating to provide maximum wearing surface. In other words would the 50 oz. as represented by #7150, 54", provide service equivalent to 60 oz., 52". For my own information and use, I would like very much to be informed as to the minimum weight essential for best wearing quality.

This same information will be useful in endeavoring to get "Fabrilite" specified for coach work. If you have any samples available in the 7150 range in green or any other colors, except the red of which I have a swatch, please send them out. The only heavy green I have received is the "Fabrilite" 6036, and I am sure this will not be considered heavy enough for coach work unless we can give them

3838



SHEET #2
FABRICS INDUSTRIAL MASTER TRADE REPORT - Correspondent's Copy

Customer GMC Truck & Coach Div.

St. and No. _____
City - Zone _____
County - State _____
Persons Interviewed _____

B. C. _____
Class _____
Report No. _____ 2
Salesman T. A. Nalle
Date of Call 1/7/48

Received for Typing _____
Date Typed _____

1. Associated Companies, Affiliations, Subsidiaries and Branches

Est. Annual* Consumption du Pont and Competitive Products

2 General type of business

3. Products made from our type materials

4. Indicate (in order of importance) firm buys on: Friendship _____ Price _____

Quality _____ **Service** _____

5. Attitude toward du Pont.

6. Our prospects for regular business.

7. Names and titles of individuals to receive mailings and du Pont Magazine.

Name _____ Title _____ Check (x) For
du Pont Magazine

Purch. Agent

2

3

& DU PONT SALES (yards)

Newburgh

Fairfield

9. Other Remarks on Back.

FF4600A-5M-9-46 □

USE REVERSE SIDE FOR ADDITIONAL REMARKS, LEFT SIDE AS TOP.

* Based on 1946 purchases.

What is the potential yardage of this firm if raw materials were available?



5877

every assurance that it will do a job equally as good as the heavy Koroseal. Incidentally, I am told that while they started using the heavy Koroseal for coach seats with considerable misgivings, they have not had any complaints whatever, some of it having been in service for over a year.

In line with previous reports and correspondence, vinyl coated fabrics will be used in trimming the interior of coaches, as mentioned in the beginning of this report. I have asked Mr. Brown to investigate the probability of offering a fairly heavy drill, approximately 36" wide, or in the absence of this, a #4024 construction.

Confirming information given Mr. Costello today, he was requested to make a new match (laboratory sample) of the pumpkin color attached to T.R. #164. Our laboratory color FM-3024 - Ink 3031-A was not considered sufficiently close. However, according to a letter dated January 7 from Mr. Mitchell, the laboratory sample tested out quite well for abrasion. Their report is that for 5,000 cycles, using CS-17 wheels and 1,000 gram load, the loss per thousand cycles was .0150.

It is requested that the preparation of this new sample be expedited all possible as the business is to be placed the week of January 12, and I would like to be able to honestly tell them that a sample is being made forthwith.

I have been receiving increasing criticism from a number of the GMC Truck people on our more or less deliberate way of getting out samples and special runs, in general. On some occasions we have come through with excellent service and on others not so good, particularly the vinyl curtain material and matching the heavy duty upholstery about a year ago. They do admit, however, that when we do sell them something the chances are that they will have no trouble with it. This feeling may be summed up as follows: chemically we are fine, but commercially and service-wise some of our competitors out-distance us.

G

3698



FABRICS INDUSTRIAL MASTER TRADE REPORT

Correspondent's Copy

Received for Typing 10/22/48
Date Typed 10/25/48

Customer GMC Truck & Coach Div., General Motors Corp. B.C. 2
St. and No. South Boulevard Class
City - Zone Pontiac 11 Report No. 169
County - State Oakland, Michigan Salesman T. A.
Persons Interviewed Mr. E. H. Nelson Date of Call 10/1

B. C. _____ 21
Class _____ 3
Report No. _____ 169
Salesman T. A.
Date of Call 10/1

COPIES TO:

5.	FLD.
6.	EJB
7.	
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1. Associated Companies, Affiliations, Subsidiaries and Branches Division of General Motors Corp., manufacturing trucks and coaches.
 2. General type of business Manufacturer
 3. Products made from our type materials Upholstery for trucks and trim for coaches.
 4. Indicate (in order of importance) firm buys on: Friendship 4 Price 3
Quality 1 Service 2
 5. Attitude toward du Pont. Very satisfactory.

Est. Annual* Consumption du Pont and Competitive Products

PYROXYLIN COATED FABRICS AND PAPER

~~RUBBER (NATURAL AND SYNTHETIC)~~ RESIN COATED FABRICS AND SHEET STOCK

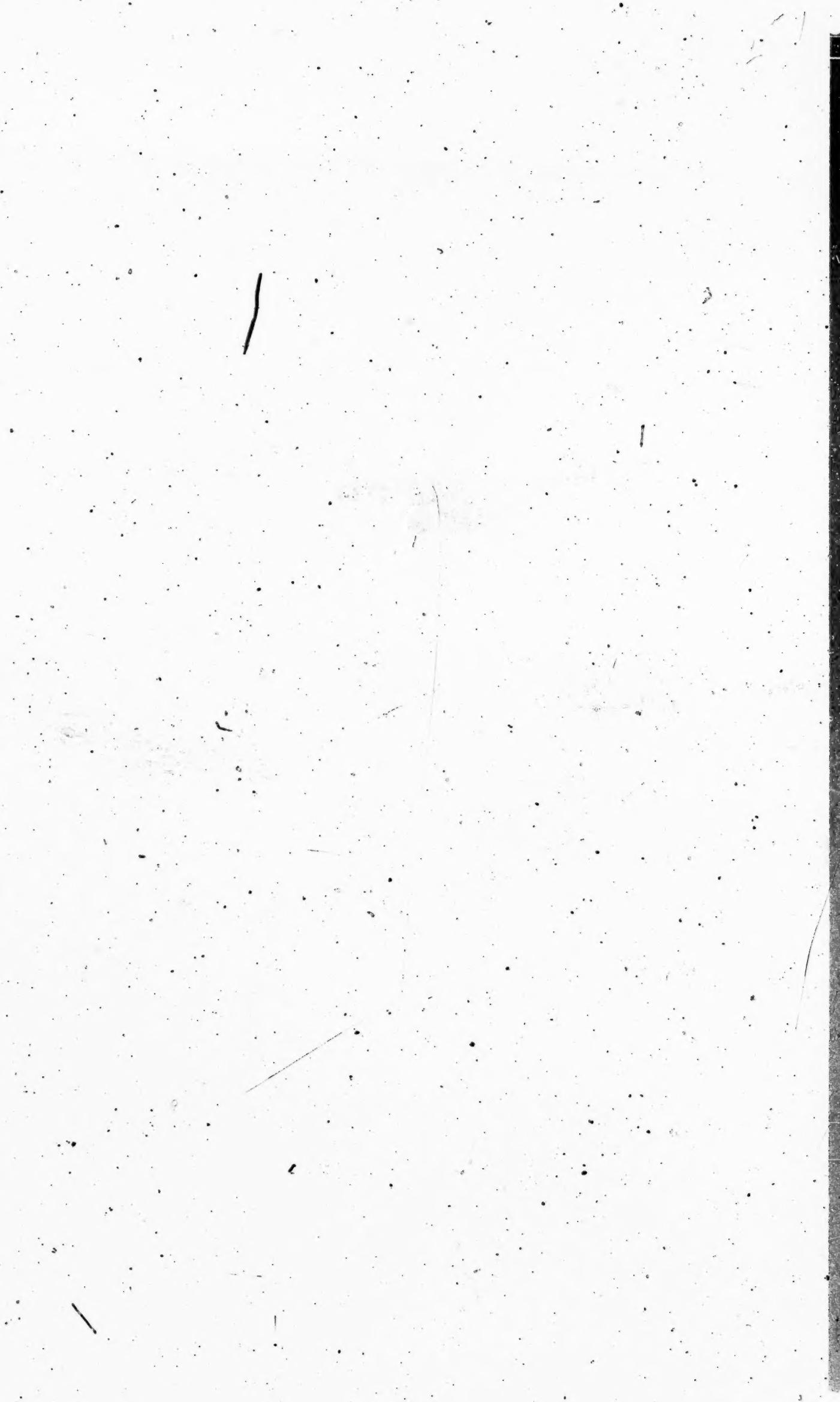
MATERIALS AND SHEET STOCK			
Tab. 6200	Du Pont		8,000
" 6026	Du Pont		85,000
Naugahyde	J.S. Rubber		35,000
Reddo	Goodall		30,000
Heavy Duty)	J.S. Rubber		15,000
Naugahyde)			

RESIN COATED FABRICS AND SHEET STOCK

What is the potential yardage of this firm if raw materials were available?

gmc 165

* Based on 1946 percentages.



5379

Have been turning out both trucks and coaches at a reasonably satisfactory rate, commensurate with the steel shortage.

The U. S. Naugahyde item shown in the consumption figures includes a small yardage of a special color, used in both the sheeting and 1.12 sateen constructions, for Greyhound coach work. The volume is not large, and the price, particularly on the sheeting item, is quite low.

Submitted a sample of heavy duty material just received from Fairfield, but have not yet been able to get a definite decision from them on it, due to the difference in the grain from what they have been using, and also the fact that the soup color is too dark and prominent. I have asked Mr. Powers to run another small sample if possible, using a lighter soup color, as the combination submitted is not an entirely satisfactory color match.



"FABRIKOID" AND RUBBER TRADE REPORT - Correspondent's Copy

Customer Chevrolet-Commercial Body Div.
St. and No. Holly & Henry Sts.
Town and State Indianapolis, Indiana.
Buyer and Title L. J. Carlen

B.C. 23

Class Y

~~Report No.~~ 223

~~Salesman T.A.Nalle~~

Date of Call. 10/16/39

For What Purpose Are We?

Our Products Used?

Suggest New Uses

Show Assoc's and Other Locations

Rec'd for Typing 10/17/39

Truck upholstery

COPIES TO:

airfield

NOV 11 1939

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Answer completely each call questions 1, 2, and 3 - General remarks to follow - Separately for Newburgh and Fairfield Products.

- 1. COMPETITION:** Specific reasons for purchase - any new competitive activities or products bought since last call? Did you secure samples?

2. DU PONT: Favorable comments, criticisms or complaints of our prices, policies or products.

3. ECONOMIC OUTLOOK: Customer's outlook on business next three months.

 - Percent capacity operating at this call.
 - Any new, regained, or lost business to report, since last call? Give specific reasons for change and tell competitors affected

4. What assistance can organization give you prior to next call?

5. Report change in firm name, address, purchasing agent; class, mailing list.

GENERAL: Each report should show continuity of effort from last visit, as well as purpose, results and needed action of call.

PERSONS INTERVIEWED: **Messrs. Baldaur and Miller.** Answer completely each call questions.

1. Landers supplies a very cheap sheeting which is entirely satisfactory. Also were low on curtain stock Chase were lower than we were on the recent olive drab inquiry. We were third. In addition to Chase, Landers were low. I do not believe Cotan, now represented by Mr. Scott, formerly with Chase, was seriously considered.

2. No comments.

3. Very busy and do not look for any decrease in production.

3-A. Estimated 90%.

3-B. See T

4. Baldauf gave me the attached piece of olive drab from last Chase shipment. You will see our color submitted 10/9 is very different. Their specification call for this to match "Dulux" color 94-2870. I am arranging to obtain a panel of this color and will forward it to Fairfield for consideration. Baldauf feels it would be desirable to have this question of color standardized. Incidentally, they have had trouble with the Chase material because of color variation.

GENERAL: Refer to Mr. Brown's letter 10/10. I advised Mr. Carlen that for his current requirements contract we had covered on sufficient raw materials over.



to supply 185,000 yards of "Cavalon", which is about 12% more than the 165,000 used to January 1st for the 1939 model, and that if needed, we could obtain an additional 75,000 yards by January 1st, 1940, which quantity would represent an increased cost of seven cents per yard. Also pointed out that we could not handle all of the 305,000 yards, representing total orders received including the last one for 118,700 yards to be held in raw materials, because it would not be possible to obtain this much cloth; costs were up seven cents, and it did not appear this much would be needed for production. Carlen replied he did not know just how much would be needed. That Mr. Kroner, Material Supervisor, had made an estimate on steel, and he would have him make one on "Cavalon". This worked out to 64,000 yards above the 147,000 yards already released. This makes a total of 211,000 yards. I asked Carlen how he would feel about being asked to pay 7¢ additional on 26,000 yards, representing the additional above the 185,000 originally covered. His reply was that he would not mind being asked, but he felt there was very little chance of our collecting. Obviously, such matters would have to be decided by higher authority. He pointed out that Kroner's figure of a total of 211,000 yards was only a guess. I told him that we had to have something definite and would consider this figure the maximum and would prepare to supply this quantity. Miller will send in a schedule releasing 16,000 yards each November 13th, 22nd and December 1st, 11th. This will cover all the balance of order 71048 not yet scheduled and 25,800 yards of order 71265 for 118,700 yards, leaving a balance in this order of 92,900 yards.

Carlen remarked that where prices on a new contract would be higher, Mr. Klansmeyer, local Manager, might want to bring in by the end of year the entire quantity ordered and store it. He agreed that this would not be in keeping with the spirit of a requirements contract. Where sources cannot deliver the entire quantity ordered such as the 92,900 yards above, they will probably cancel such quantities not actually needed.

Inquiries for next year will be sent out late this month, and he expects to have all new contracts closed by December 1st.

The use of cord welt runs about 3 yards to one of "Cavalon" and I figure one yard of "Cavalon" will produce 45 yards of welt. Miller estimates total welt requirements will be 350,000 yards.

EXCERPTS FROM AUTOMOTIVE PRODUCTS TRADE REPORTS

Fisher Body Corporation

<u>Salesman</u>	<u>Date of Report</u>	
R. K. Cathcart	1-7-26 (GMC 1685)	<p>1. [Customer's complaint] Mr. Wilson not thoroughly satisfied with our primer. He feels it ought to be bodied up a little. He feels that it is really too light a product for best results. Therefore, Flint wants to body up this Primer and main ain the same sheen and drying time as the present product.</p> <p>2. [Are competitors' products satisfactory?] Not entirely. They see no advantage over our 1012.</p> <p>3. [Why customer buys from competitors] To satisfy themselves whether Acme Black is as good as it has been pictured to them.</p>
R. K. Cathcart	1-8-26 (GMC 1686)	Ran some experiments with 1525 and 1526, both thinned two parts of Duco to one of Thinner. 1526 did not look a bit good. It had numerous particles of foreign matter which looked like unground pigment. This did not polish any better than our 1012 Black. 1525 seemed to lay flatter, but was not sufficiently smooth to polish without a sanding operation.
R. K. Cathcart	1-25-26 (GMC 1688)	Production 200 a day. Mr. Wilson says Acme Black goes further in as much as they can use it - Black 40 parts to Thinner 60 parts. He also approved 207412 Black. I am having a drum of 6979 Oxide Primer shipped up to this plant for trial in as much as Mr. Wilson is not satisfied with 6974. Mr. Wilson requested we make up Farrie Red, Ivory, our Flint #67 and Acme Pistachio Green in Pyroxylin striping colors. Mr. Cross is not satisfied with our deliveries. We had better step on these before some one beats our time.

<u>Salesman</u>	<u>Date of Report</u>	
R. K. Cathcart	2-1-26 (GMC 1690)	<p>1. [Customer's complaint] Primer 6974 not satisfactory. Trying 6979</p> <p>2. [Are competitors' products satisfactory?] Yes.</p> <p>3. [Why customer buys from competitors] For trial and they state it goes further than Duco.</p> <p>9. Production 211 a day.. Primer being tested this week. Rubbing Compound shows no advantage over what they are using.</p>
G. E. Branham	2-19-26 (GMC 1689)	Are still running Acme Black. Cross said they were showing a saving in material cost. Acme Black \$3.85; Acme Thinner \$1.60. He could not prove this with his own figures for Duco and 3614 over whole body showed a saving of approximately 15¢ per body. They have no 3614 in Lansing, but it is posted for their first Thinner order. There is more and more pressure being put on, use of Acme from Detroit.
G. E. Branham	3-4-26 (GMC 1692)	R. C. Williams: Send five gallon sample size Primer used at Pontiac marked attn: "C. C. Cross." When new Duco Black is ready advise me as Cross will order same. Using V. E. P. Striping color. Says Duco Striping sent recently is not nearly so good in working, covering, etc. as V. E. P.
R. K. Cathcart	3-29-26 (GMC 1663)	Billing Green situation unchanged. They are still using R & M thinner and getting by with same. I feel that something should be done so when one of our customers start using this green and similar colors in case of a repetition of pitting we will be able to offer some assistance. Right now the only thing we

5384

<u>Salesman</u>	<u>Date of Report</u>	
R. K. Cathcart (Cont'd.)	3-29-26 (Cont'd.)	could offer would be R & M Thinner. A condition like this is serious in as much as other Fisher units experiencing anything like this will immediately start using a competitive thinner. This plant is now running 540 a day. Scheduled for 600 in May.

3105

5385

EXCERPTS FROM PLASTICS DEPARTMENT - INDUSTRIAL DIVISION
MOLDING POWDER TRADE REPORT

Inland Manufacturing Co.

<u>Salesman</u>	<u>Date of Report</u>	
Mack	1-9-41 (GMC 1718)	1 - 7 - We are out here because our powder fails to pass their specifications: while Celluloid Company does pass, it doesn't as consistently as does Eastman, moreover they have greater molding difficulties with Lumarith. Consequently they are using Tenite exclusively and I have so shown the consumption for the year 1941 and will keep it so till we get an approved powder.
Mack	3-24-41 (GMC 1719)	1 - Production sample rejected a/c failure to pass cold box. This is 19135. Production (KF-844) is standing up best of all I should say, tho I'm sure they will insist on a test of further quantities of it and from production molds before approving and this because present test shows it somewhat critical from both cold break and humidity standpoint. Research 5156 failed cold box and humidity and is rejected. 2 - Research both failed in humidity but stood up in 4 cycles in cold box and probably will stand up through 5th cold box. Despite failures in humidity they are continuing thru 5th heat and cold box test.
		* * *
		Regarding colors: - The four colors mentioned in Stu Miller's report #89 came in today. However, it seems that Inland have some information direct from Cadillac that they prefer Lumarith O-4188-N or Plastacele K-26007. I don't know just what is meant by this or from whom in Cadillac it came. Are you sending Inland any K-26007. If not, I suggest you do.

* * *

3106

~~5:356~~

S. esman Date of Report

Mack 3-24-41
(Cont'd) (Cont'd)

Oldsmobile: Our K-46092 very close to Lumarith 0-5222-K. It's a trifle lighter i.e. should have a trace more tan in it, Shroyer believes. It's very close but I suggest we take another crack at it. For my information, is K-46092 a new development or is it our production of 1941 Pontiac? The '42 Olds. is the '41 Pontiac.

* * *

KF-884-A

1 wheel failed in initial cold.
5 wheels passed 4 complete cycles.
slight unmolding in humidity test.

M-5155

6 wheels passed 4 complete cycles in last cycle O.K.
Failed in Humidity test.

M-5156

Rejected for cold test.
Unmolded in humidity test.

M-5157

6 wheels completed 4 cycles O.K.
Failed in Humidity test.

Mack 3-26-41
(GMC 1720)

While I haven't much hope for KF-884, except should an emergency occur, I think since its performance was not too bad, that we should send out more of this powder (25 pounds) for further tests in production.

Since KF- is standing up in 4 cycles, and the two Research ones are too, with the exception of humidity, I'm of the opinion there will be no change in their status thru the 5th and last cycle.

I base my contention that KF-884 won't do on the fact that they have now a competitive product that is much better. KF-884 is obviously too critical to compare with Tenite which passes their specifications with ease. I simply suggest additional powder to keep up the action and to serve

<u>Salesman</u>	<u>Date of Report..</u>
Mack (Cont'd)	3-26-41 (Cont'd)

as a breathing spell until we have some modification of the two research developments. These showed up well in the cold box but poor on humidity. Possibly we could cut down on cold resistance and build up against water sensitivity.

Since KF-884 much better than 19138 I'd like to see us go further than we did on KF-884 if possible. I'm afraid, despite Dr. Flower's altruistic view, that price will stop us on higher cost Research types.

In closing I want to repeat what I've said many times before: we've got to get busy and keep busy if we want to get back in here. It's been over six months since I've been able to solicit business here.

Mack	4-24-41
	(GMC 1721)

Both Shroyer and O'Brien feel we are premature in our efforts to obtain the information about Inland's requirements. Were we on the approved list or even nearing such a stage your request would be a natural. What they feel is more vital to us is a genuine effort to develop a material as good as Tenite. To be frank, our seeming lack of interest, and by this I mean two submission in 6-7 months has, I feel, aroused their suspicions we are not greatly interested and I had to do some fast talking to Doc Flower et al following receipt of your letter, to convince them, otherwise. I have no comment from you on my last several Trade Reports reporting results on latest tests run, tho I asked for them: no word of any further steps being taken by Plant or Research to eliminate shortcomings of our last developments; no follow up in a personal way by Quinn or any other member of Research Department to see and check results of the tests run at Inland. To sum it up briefly and directly to the point, no nothing since Joe Quinn stepped on the spirit some 6 - 7 weeks ago to return to Arlington.

I follow up color submissions but truthfully I can't get too excited about them. Nor could anyone else in my opinion with the lack of encouragement I'm getting that we are making.

5358

Salesman Date of Report

Mack 4-24-41
(Cont'd) (Cont'd)

anything like an "all out" effort to develop a material that will pass their molding specifications. Matching colors, you must realize yourself, is of no avail to us, and by this I mean no business to us will result unless we pass the material specifications and after all it's business we are after. To illustrate: We are approved for color in fact selected on Pontiac. Eastman will match and secure the business and we'll get nothing but the glory of having our color originally selected.

I realize it would be an advantage to have color approvals now so we could jump right into production when our material passed the specifications, but, at the slow pace we are traveling in this latter regard, we should not worry too much about color approval. I don't feel it's necessary to send Monroe out: the color situation is this: Buick - we have not matched; redevelopments will be molded Monday - I'll report Wednesday in the throes of a change; going to Lumarith 05583 from 0-5222K. Pontiac is ours so far i.e. 26084. Inland has just sent a raft of colors to Cadillac.

I've expressed verbally and in reports and letters what I think should be done to secure a material approval and once we get this I feel sure I can get not only the desired information but a fair share of the business.

EXCERPTS FROM INDUSTRIAL SALES TRADE REPORTS
FINISHES DIVISIONPackard Electric Co.

<u>Salesman</u>	<u>Date of Report</u>
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W. P. Fisher 1-9-36 1a. [Why does customer buy from competitors (quality, service and price, etc.)?] All three.

* * *

B) Our black X-700-753 looks good. Our slow manufacturing service and distance are serious handicaps to us. They are now awaiting 2 dr. order. If this works O.K. we will get a real order. Littman is also interested in the same thing at lower solids and same or higher viscosity along lines of my letter of last week. He will order a drum for trial as soon as we advise him code number. My idea is to get some business on X-600-753 at \$2.10 and at same time to start them testing a lower solids at same or higher viscosity to be supplied at a price close to the competitive price of \$1.90.

W.S. Robertson 4-28-36 (GMC 1728)

A) With W. P. Fisher to follow up tests on low tension cable lacquer mixtures.

B) The results are still not satisfactory, although the increased ratio of oil to PX made a very definite improvement. However, the cable still shows a white cast in the crevices of the braid due to bubbles and has a rough feel. Further mixes are being made in which small quantities of butyl acetate have been added to help eliminate the bubbles and get better flow.

* * *

Dibolt has hinted that we are going to have to watch our prices on these high tension lacquers. There is nothing definite but in preparation to a serious discussion of this subject in the near future please ask Parlin for the theoretical as well as the maximum and minimum solids limits on both the clear and black.

5390

<u>Salesman</u>	<u>Date of Report</u>	
W. S. Robertson	5-5-36 (GMC 1729)	1(a) [Why does customer buy from competitors (quality, service and price, etc.)?] All three. DuPont usually given break on equal basis.

* * *

B. Litman phoned me that our X-600-809 Black H.T. cable lacquer was causing bad sleeving because of its very high viscosity. This trouble was encountered on one of the last three drums of batch 446081 - MOC - 110531. Apparently this condition was not caught until about 15,000 feet of cable had been run. This cable will now have to be reworked because of its poor appearance.

When this condition was reported to Litman he immediately took down the drum in use and ran a viscosity which was 3 minutes 47 seconds at 76° F. in a Gardiner Mobilometer.

He immediately got a sample of a drum in our last shipment and found it to run 2 minutes 16 seconds at 70° F. Because the viscosity was so high he did not try this material in regular production. This was batch 426126 - MOC - 108370.

Complete details are covered in a memo to Parlin, copy of which is attached.

They are rejecting the 16 1/2 drums of our material which they have on hand. It is being held pending the outcome of our investigation.

W. S. Robertson 5-13-36 What appears to be a complaint on our clear (GMC 1731) high tension cable lacquer, has now developed. The sales department are complaining about the non-uniformity of color on the cable finished with our clear. From an examination of the

<u>Salesman</u>	<u>Date of Report</u>
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W. S. Robertson (Cont'd)	5-13-36 (Cont'd)
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samples of cable and of the lacquer film stripped from the cable, it looks as though the dye was left out, or partially left out of some of our clear. Three samples of cable showing this are being sent you under separate cover. They are:

1. Thick cable showing the light color which is unsatisfactory and about which they are complaining.
2. Thick cable showing dark color desired.
3. Thin cable showing dark color desired. This cable was finished with X-600-679 Batch 431563 MOC 108163.

They are unable to tell what batches were based on the first two samples. It was our lacquer, because they have not used any competitive clear.

* * *

DeBolt said he felt the price of our clear was too high. He admitted that a clear would cost more than a black, but felt that at \$2.00 our clear was out of line. He said this before any discussion of a reduction in price on the black took place and he was apparently basing his contention on lower competitive quotations on black. I believe that it will be necessary for us to maintain a ten cent differential on the clear and that he will force us to reduce our price to \$1.90 just as soon as a second source of supply is approved. At present we are the only approved source, but the recent trouble on both the black and the clear, will speed up the search for a 2nd source. There is nothing to force us to reduce our price now, except the unfavorable psychological reaction of holding our price up until he forces us to go down to a ten cent differential over the black by a second approved source on clear.

5392

<u>Salesman</u>	<u>Date of Report</u>
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W.S. Robertson (Cont'd)	5-13-36 (Cont'd)
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Up until now, DeBolt has been buying trial lots from various suppliers (this refers to black). It is his intention to discontinue this as soon as possible and line up about two regular suppliers on both clear and black and give them future dated orders to work on. He said today that he would be perfectly satisfied to have us start manufacturing ten drums just as soon as he releases ten drums, even though we don't have a formal order. We can adopt this practice on both clear and black until he gets squared away on his plan to issue future dated orders.

W.S. Robertson	6-17-36	I could make little headway with DeBolt on the (GMC 1735) possibility of increasing his takings of black, other than his admission that he was trying to squeeze us further on price.
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* * *

Had a few minutes with Litman before closing time and learned that the Black High Tension Cable Lacquer situation is all up in the air again. Belden is selling a Black H.T. cable which is far superior to the Packard Cable in heat resistance and their sales department is raising an awful howl. The Belden cable (imprinted "77 Belden 77" in orange) will stand eight hours at 300 deg. F. without cracking around a half inch mandrel. It also resists decomposition better in a crude test which Belden is promoting. This test consists of putting a 100 watt light bulb in a small cardboard box and suspending samples of cable to be tested about 1/2 inch from the bulb. Litman says our finish decomposes very quickly whereas the Belden cable does not. The Belden cable also has satisfactory cold crack resistance. While X-600-213 is not good in this respect I urged Litman to test it because of its heat resistance. I am sending you a small piece of Belden cable which should be sent to Parlin. I will try to get more on my next visit.

Someone has already offered Packard a lacquer approaching the quality of the Belden finish but it is somewhat difficult to dry. We are

4
3113

5393

Salesman Date of Report

W.S. Robertson 6-17-36
(Cont'd) (Cont'd)

going to have to move fast in doing likewise for there is no question in my mind but what Packard will be using a more heat resistant finish in the near future.

[5394]

EXCERPTS FROM AUTOMOTIVE PRODUCTS TRADE REPORTS
FLINT PLANT

Olds Motor Works

Salesman Date of Report

Frank Hamaker

12-7-26
(GM 1695)

1. [Customer's complaint] They are contemplating putting through a test of Donahue's and R. A. Becker Fender Enamels. Their complaint regarding ours is that it does not cover solid enough or fill good enough. Donahue's Salesman (Mr. Ed. Farr, formerly of the Flint Motor Co.) claim they can give them a better job than we can. Am trying to arrange for test of our new rubber coat.

* * *

3. [Chief reasons why customer buys from competitors] Both Price & Quality.

5395

[5395]

EXCERPTS FROM AUTOMOTIVE PRODUCTS TRADE REPORTS
FLINT PLANT

Cadillac Motor Car Co.

<u>Salesman</u>	<u>Date of Report</u>	
G. E. Branham	1-15-26 (GMC 1705)	Wheels in F-6402 and FP-4230 are ready for inspection. F-6402 and FP-4230 sent here will not air dry in 36 hours or anything like it. They were given same drying time as Demming Primer and Acme Lead - 24 to 36 hrs. at 100, then 2 or 3 days A.D. Said our Lead Ground finer than Demming and thought did not fill quite as good. After wheels were given FP-6764 Surfacer they were repainted on this account four sets of wheels given four coats Duco, last coat one part 1838 to 1 part Duco and 4 sets 1838 tinted with Duco. This brought gloss to approximately that of high polished Duco job. These wheels will have both roof and road test.
		<u>#7 Polish</u>
Louis Adams for G. E. Branham	3-2-26 (GMC 1714)	Called at Cadillac today; talked with Larry Keho and Mike Stone. They informed me that everything was O.K. except one thing and that was about special Duco colors. For instance, they order Ditzler's Victoria Blue D.D. We match it and we call it Alexandra Blue D.D. They send an order to the Paint Shop to paint a certain body with Ditzler's Victoria blue D.D. They don't say Alexandra Blue D.D. There are two ways that we can make users of special colors satisfied and contented. First to educate the purchasing department in the different plants to make their orders read with our names when ordering and send same name to paint shop instead of the name of the color we are matching. Or let us put their name on our label, but use our numbers. What difference does it make whether its Valentine's, Ditzler's,

3116

Salesman

Date of
Report

5396

[5396]

Louis Adams for
G. E. Branham
(Cont'd)

3-2-26
(Cont'd)

Reams etc. Blue so long as the DuPont oval is
above? What's a little name or two in our sweet
young lives?

3117

[5397]

EXCERPTS FROM SALESMAN'S TRADE REPORT
RUBBER CHEMICALS DIVISION

Inland Manufacturing Division, GMC

<u>Salesman</u>	<u>Date of Report</u>	
R. B. Appleby	7-5-49 (GMC 1740)	2. Neozone D is principal antioxidant for regular work. Antox has been dropped when rubber replaced by GR-S in windshield striping. Staining important in a lot of their work and use AgeRite Alba in refrigerator strip and AgeRite White in windshield strip. Also working with Ionol and also trying Deenax, a new Enjay antioxidant, of the non-staining type.
		3. Using some RPA #2 but volume off also because of GR-S replacing rubber. Use a little RPA #5 in GR-S.
		* * *
		9. Business is still good here and expected to be as long as automotive industry stays good. Christensen said he saw today the Government was suing us as a trust and to split the two of us apart. Said their purchases would show no favoritism to du Pont as F & F Department has had no business this year except a little maintenance on former jobs and Pigments Department gets no TiO ₂ as others took care of them during War and will keep the business. Our division is doing OK but even so competitive items are split though we do get best part.

3118

EXCERPT FROM THE MONTHLY REPORT OF THE
CELLULOSE PRODUCTS DEPARTMENT TO THE
EXECUTIVE COMMITTEE FOR APRIL, 1922,
DATED MAY 15, 1922.

5298

-14-

PRICE POLICY - COMPETITION:

Conditions are generally the same as outlined in the previous months of this year, namely, a continued necessity for making special prices to meet low competitive quotations.

As pointed out in last month's report, it has not seemed wise to meet the very low prices being quoted on Rubber owing to the fact that General Motors business has been enabling us to run Fairfield at a fair rate, but this condition may change unless General Motors orders continue as in the past.

In view of the greater volume of business for Fabrikoid, largely brought about with by the business given us by the General Motors Co. with resulting lowered costs, (with the prospect of being able to maintain these costs for some time to come) it was thought advisable to give General Motors a revised price on the qualities of Fabrikoid so affected. This was done the latter part of April with credits on all such business shipped since April 1st. This had a very good effect upon the General Motors units, and while it has not been possible to date to give them a similar advantage on rubber, should conditions warrant the same policy will be followed.

* * * *

Note: Handwritten word "Good" appears in lefthand margin opposite third paragraph.

3119

EXCERPTS FROM THE PAINT, LACQUER AND CHEMICALS DEPARTMENT MONTHLY REPORT TO THE EXECUTIVE COMMITTEE FOR NOVEMBER, 1926, DATED
DECEMBER 23, 1926

FAB-2

* * * *

FAIRFIELD BRANCH:Sales.FAIRFIELD BILLINGS COMPARISON - DOLLARS

	November 1926	October 1926	Jan.-Nov. 1926	Jan.-Nov. 1925
Carriage Cloth - GMC	\$163 816	\$98 902	\$1 863 973	\$877 028
" " - All others	58 615	62 422	670 570	644 318
Specialties - Ventube	19 750	9 674	177 091	158 924
" - All others	84 341	151 801	1 030 925	473 374
Export - All products	41 988	70 035	579 236	652 729
Total	\$368 510	\$392 834	\$4 321 795	\$2 806 373

* * * *

FAB-5

Prices and Competition. We have additional reports of extremely low prices made by Cotex, Federal Leather, Masland and Duratex to automotive trade, their prices on volume business in some instances being lower than our average factory costs. We are watching this competition very closely but have not yet been obliged to break our general prices materially, although it is apparently becoming more serious and giving us more concern. The Duratex Company are becoming one of our most disturbing competitors on leather substitutes, and the evidence would indicate their willingness to take business at almost any price they can secure.

* * * *

Harry A. Manucci

EXCERPTS FROM THE MONTHLY REPORT OF THE
CHEMICAL PRODUCTS DIVISION TO THE EXECU-
TIVE COMMITTEE FOR FEBRUARY, 1927, DATED
MARCH 22, 1927.

5400

CP-4

* * * * *

The principal increase occurs in sales of colored Duco and Thinner to automobile manufacturers and a noticeable increase in sales to the refinish trade. Sales of pigmented Duco to automobile manufacturers amounted to 138,182 gallons of which 81,798 gallons represent sales to the General Motors group, as compared with January sales of colored Duco of 100,693 gallons of which 61,827 gallons were sold to General Motors units.

* * * * CP-5

Total sales of colored Duco during the month of February amounted to 215,000 gallons, distributed by industries as follows:

General Motor units	39%
Other Motor manufacturers	27
Automotive refinishers	15
Railroads	1
Furniture manufacturers	8
General Industrial	8
Export	2
	100%

* * * * * Increases in sales of Parlin Chemicals other than

Duco occur in both the decorative and non-decorative lines. In the decorative line the increase is caused chiefly through unusually heavy purchases of Engenamel by a number of regular customers, notably Chevrolet and Oakland Companies.

EXCERPTS FROM MONTHLY REPORT OF THE
AUTOMOTIVE FINISHES DIVISION TO WILLIAM
RICKTER FOR MAY, 1931, DATED JUNE 13,
1931.

5-101

DIVISION OF SALES TO AUTOMOBILE MANUFACTURERS

	<u>May</u> <u>1931</u>	<u>Percent</u>	<u>April</u> <u>1931</u>	<u>Percent</u>
General Motors	\$542 632	81.0	\$513 966	78.0
Other Auto Mfgrs.	125 919	19.0	144 611	22.0
Total	\$668 551	100.0	\$658 577	100.0

AF-2

AUTO MANUFACTURERS - General Motors

May sales to General Motors were \$542,632 compared with \$513,966 in April, 1931, an increase of \$28,666, or 5.6%. Sales were lower to Fisher Body and Buick but these reductions were more than off-set by increased purchases by the other units, principally Chevrolet.

AF-3

Other Auto Manufacturers

Sales to "other Auto Manufacturers" in May were \$125,919 compared with \$144,611 in April, 1931.

AF-4

June sales to "Other Auto Manufacturers" are estimated at \$100,000 compared with \$125,919 in May. 3122

EXCERPTS FROM MONTHLY REPORT OF THE
FINISHES DIVISION FOR DECEMBER, 1932,
UNDATED.

5402

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-2-

AT
R

GENERAL MOTORS

December sales to General Motors were \$370,463
compared with \$158,459 in November.

* * * * *

-3-

OTHER AUTO MANUFACTURERS

Sales to Other Manufacturers were \$23,709 in
December compared with \$17,462 in November.

* * * * *

3123

Government's Exhibit No. 1372.

EXCERPT FROM THE MONTHLY REPORT OF THE
FABRICS AND FINISHES DEPARTMENT TO THE
EXECUTIVE COMMITTEE FOR AUGUST, 1935,
DATED SEPTEMBER 20, 1935.

5403

-6-

AUTO MANUFACTURERS

	<u>August 1935</u>	<u>July 1935</u>	<u>To-Date 1935</u>	<u>To-Date 1934</u>
General Motors	\$319 924	\$670 948	\$4 957 279	\$4 229 642
Other Auto Mfrs.	<u>195 967</u>	<u>161 668</u>	<u>2 973 597</u>	<u>2 012 527</u>
Total	<u>\$515 891</u>	<u>\$832 616</u>	<u>\$7 930 876</u>	<u>\$6 242 169</u>

3124

EXCERPT FROM THE MONTHLY REPORT OF THE
FABRICS AND FINISHES DEPARTMENT TO THE
EXECUTIVE COMMITTEE FOR JULY, 1946,
DATED AUGUST 23, 1946.

5104

* * * * -1-

Most of our automotive and industrial customers are increasing production at a rapid rate and their current finishes requirements are greater than at any time since the end of the war. Despite all our efforts, we may not be able to supply the full requirements of customers in the automobile and refrigerator industries and are reconciled to falling far short of satisfying the demand in the other branches of the business, due to the scarcity of raw materials.

* * * *

3125

EXCERPT FROM THE MONTHLY REPORT OF THE
FABRICS AND FINISHES DEPARTMENT TO THE
EXECUTIVE COMMITTEE FOR MAY 1947, DATED
JUNE 27, 1947.

5105

* * * * -2-

SALES - May dollar sales were 14% under the record month of April and 6% below forecast. This was entirely the result of a 30% decline at Fairfield due partly to deferments on the shipment of existing orders from important customers and partly to our inability to complete some substantial orders because of delays in receipt of cotton textiles. Russell business continued subnormal, reflecting the lethargy in the shoe industry. There is little likelihood of any substantial improvement until fall.

* * * *

3126

Government's Exhibit No. 1375

5-106

Excerpts from Annual Competitive Report (1935), dated March 5, 1936, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

* * *

Total Finishes Division sales for 1936 are estimated at about the 1935 level; an increase of \$2,000,000 (10%) in sales exclusive of automotive finishes being offset by a decrease in automotive of 17% due to the adoption of new formulas by General Motors, which greatly reduces their requirements for thinners, and to the fact that the Ford Motor Company will manufacture a larger percentage of their own requirements.

* * *

The decline in our position in rubber fabrics for automotive industry is due to General Motors' adoption of all-steel top for all their models except the standard Chevrolet, while other manufacturers whose business goes to competition have not abandoned fabric tops to the same extent. Further declines in available business from this field are expected as all-steel tops become more generally adopted. . . .

* * *

5-107

Excerpts from Annual Competitive Report (1936), dated
March 24, 1937, from Fabrics & Finishes Department to
Executive Committee of E. I. du Pont de Nemours and Company

* * *

Automotive

Requirements of finishes by automobile manufacturers in 1936 exceeded 1935 by approximately 10% and our sales gained only 1%. This served to lower the duPont participation in the automotive industry's total requirements from 50.3% in 1935 to 46.6% in 1936. The change was not caused by loss of business to competition but through the following circumstances:

1. The Ford Motor Co. in 1935 and until June 1936 manufactured 50% of their requirements of synthetic resin enamels and purchased the other half from us. In the last seven months of 1936, Ford manufactured 75% of their requirements and purchased 25% from us.
2. An improvement in the quality of Duco sold to General Motors decreased the quantity of Thinner used per car.
3. Reductions of \$350,000 in selling prices were effected in 1936 versus 1935.

* * *

In 1936 other automobile producers followed General Motors' earlier adoption of all-steel tops. This further reduced the available business in the automotive section of the rubberized fabrics industry.

The almost universal adoption of the turret top for the 1937 automobile models will eventually result in elimination of the remaining replacement business on top material from jobbers.

* * *

Excerpts from Annual Competitive Report (1937), dated March 23, 1938, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

* * *

Automotive

Requirements of finishes by automobile manufacturers in 1937 exceeded 1936 by 8%, and our sales gained only 3%. This served to lower duPont participation in the automotive industry's total requirements from 46.6% in 1936 to 43.8% in 1937. The change was not caused by loss of business to competition but thru the following circumstances:

1. The Ford Motor Co. until June 1936 manufactured 50% of their requirements of synthetic resin enamels and purchased the other half from us. During all of 1937, Ford manufactured 75% of their requirements and purchased 25% from us.

2. Loss in competitive position by General Motors, (Principal sales outlet of this Division) in 1937, their production showing but a 3% increase over 1936, as compared to an industry increase of 8%.

* * *

The adoption of turret tops by the automotive industry has reduced outlets in this field largely to jobbing, replacement business and sales of winterfront materials. DuPont's sales to the automotive industry in 1937 were \$721,300; aided by sales of Cavalon, an upholstery material for commercial cars and trucks, replacing pyroxylin materials. Principal competition in this type material is the U.S. Rubber Company with "Naugahyde" and the L. C. Chase Company with "Redo."

511(3)

Excerpts from Annual Competitive Report (1938), dated March 9, 1939, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

* * *

The reduction in the Department's composite percentage of total business resulted in general from customer requirements declining to a greater extent in those industries from which we secure a large share (35% to 80%) of the available business than in the industries where our participation is relatively small (3% to 35%). There were no actual losses of importance in individual markets, the 1937 positions being either maintained or bettered in practically all lines.

* * *

Automotive

Finishes Division sales of \$6,482,900 to automobile manufacturers in 1938 were 49% less than in 1937 and as total requirements by the industry decreased 52%, our participation increased to 46.5% from 43.8% in 1937. The improved position resulted from:

- (1) Gain in competitive position by General Motors (principal sales outlet of this Division) in 1938, their production decreasing 43% from 1937, as compared to a reduction of 47% for the industry.
- (2) Lower dollar sales per car by competitors due to several automobile manufacturers (De Soto, Dodge, Chrysler and Nash) changing from lacquer to synthetic resin finishes. The reduced sales occur through partial elimination of thinner and lower prices per gallon of synthetic finishes versus lacquer.
- (3) Securing a larger share of Nash, Studebaker and Oldsmobile requirements of finishes.

* * *

Fabrikoid

Sales of pyroxylin coated fabrics by the Fabrikoid Division are 30% under last year. Sales by the entire industry decreased 23%, resulting in the duPont position decreasing to 23.0% in 1938 from 25.2% in 1937. The main causes for the loss in position in this field are:

- (1) A switch by General Motors Corporation from pyroxylin coated products for automobile truck seats, etc., to rubber coated upholstery, "Cavalon," a Fairfield product. Other automobile manufacturers are still using pyroxylin coated materials supplied by our competitors.
- (2) A trend in the market for pocketbook materials from high-grade pyroxylin coated fabrics to a cheaper product manufactured by Columbus Coated Fabrics Co. and Taunton Coating Mills, Inc., consisting of fabrics coated with drying oil or a combination of drying oil and pyroxylin in patent leather finish. DuPont has led in this field with the synthetic resin finish material, "Super-Flex," which is of higher quality and cost.
- (3) Refusal to meet low competitive prices on several miscellaneous items. A great many cases were encountered where competitors were quoting prices less than our replacement cost.

* * *

Excerpts from Annual Competitive Report (1939), dated March 12, 1940, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

5411

* * *

Automotive

Finishes Division sales of \$8,363,000 to automobile manufacturers in 1939 were 29% above 1938 and as total requirements by the industry increased 42%, our participation dropped to 42.1% from 46.5% in 1938. The changed position resulted from:

- (1) Ford Motor Co. inaugurated a policy in the latter part of 1938 of discontinuing all purchases from General Motors and the latter's affiliates, which from their point of view includes the duPont Co. This action resulted in 1939 sales of finishes to Ford decreasing \$834,000 from 1938, no shipments having been made to them since January 1939.
- (2) During the latter part of 1939 several General Motors plants switched to new formulations of Duco and thinner developed in our laboratories. These improved compositions permit application of the desired film thickness with fewer spraying coats than heretofore required, resulting in lower thinner usage. This change had the effect of reducing sales of thinner to General Motors in 1939 by \$272,000, which amount also represents the savings from this development in General Motors' finishing costs. The reduction estimated for 1940 is \$700,000.
- (3) Partially offsetting the losses explained in (1) and (2) above, new business aggregating \$130,000 was secured from Ternstedt Mfg. Co. The supplier displaced was Ferbert-Schorndorfer.

* * *

Fabrikoid

Sales of pyroxylin coated fabrics by the Fabrikoid Division in 1939 were 19% above 1938. Sales by the entire industry increased 20%, resulting in our position decreasing to 22.7% in 1939 from 23.0% in 1938. The

5412

main causes for the small loss in position in this field are:

- (1) For the past two years General Motors Corp. has been gradually switching from pyroxylin coated products for automobile truck seats and some of their other upholstery requirements to rubber coated materials. The extent of change was greater in 1939 than the previous year and although the business was retained with "Cavalon," our rubber coated upholstery, the position in the pyroxylin coated fabrics market was adversely affected, as some of the other automobile manufacturers are still using pyroxylin type materials supplied by our competitors.

* * *

Excerpts from Annual Competitive Report (1940), dated March 4, 1941, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

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* * *

Automotive Finishes

The improved competitive position in 1940 over 1939 resulted largely from General Motors securing a greater portion of the total automobile business (43.9% in 1940 against 42.1% in 1939).

* * *

Automotive

About five years ago rubber coated fabrics started to supplant pyroxylin materials for automobile truck seat upholstery and usage of the latter by the automobile industry gradually decreased until 1940 when style changes resulted in considerably higher requirements of pyroxylin coated fabrics as trim on the interior of closed cars. Our sales improved from \$360,000 in 1939 to \$870,000 in 1940, approximately 50% of the industry's total requirements.

* * *

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Excerpts from Annual Competitive Report (1941), dated March 12, 1942, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

* * *

Automotive Finishes

The improved competitive position in 1941 over 1940 resulted mostly from General Motors securing a greater portion of the total automobile business (45.8% in 1941 against 43.6% in 1940) and partly from obtaining a larger share of the finishing requirements of Willys, Hudson, Nash, A. O. Smith, Diamond T Truck, and E. G. Budd.

* * *

Automotive

The trim of the interiors of 1941 and 1942 passenger cars was such as to permit increased usage of pyroxylin coated fabrics for such purposes as the tops and backs of front seats, kick-pads, shelves behind rear seats, etc. Du Pont sales increased to \$1,365,000 in 1941, 57% over 1940, and represented 30% of the total automotive requirements. It is believed that Textileather Corporation secures the next largest share, as they supply a sizeable portion of Chrysler's needs.

* * *

Remarks:

The Fairfield business expanded substantially (1941 sales 88% above 1940) and the type of products differed considerably from past years. The largest increase (from \$200,000 in 1940 to \$2,000,000 in 1941) was in "Fairprene" products which are neoprene coated fabrics, compounds, etc. for self-sealing airplane fuel cells, cable tapes, gaskets, etc. Important gains occurred also in sales of "Cavalon," a rubber coated upholstery material used principally in the furniture and automobile industries; and in "Ventube" and other mine supplies. These products all

100% A

yield a wide margin of profit and as their increased volume required nearly all of the plant capacity, a considerable amount of narrow margin profit business which might have been secured was not solicited.

U. S. Rubber Company improved their competitive position from 7.3% of total available business in 1940 to 14.7% in 1941. Their improvement resulted largely from contracts with the Government for raincoat material, business which was not particularly attractive to us but which may have been to U. S. Rubber Company, who make both the material and the raincoats.

* * *

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Excerpts from Annual Competitive Report (1946), dated March 17, 1947, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

* * *

AUTO MANUFACTURERS - Our competitive position declined from 45.0% in 1945 to 37.1% in 1946 because of a strike in General Motors plant during the first quarter of 1946. During this period, other auto manufacturers, supplied largely by competition, maintained production at fairly satisfactory rates. Actually, analysis shows a stronger position than pre-war since our position with General Motors has been maintained and since important gains were made with such accounts as Ford, Chrysler, Nash and Hudson. Dollar sales to accounts other than General Motors reached \$2,014,000, more than double the 1941 figure despite auto production, exclusive of General Motors, 32% below 1941.

* * *

Our competitive position on pyroxylin coated fabrics dropped from 13.7% in 1945 to 12.6% in 1946, because of inability to obtain fabrics to meet trade demands. Several competitors were in a more favorable position through ownership of textile mills, while some others resorted to coating goods for cotton manufacturers who sold the goods direct to the trade.

The trend in the important automotive and upholstery markets is away from pyroxylin coated fabrics in favor of resin coated fabrics and unsupported sheet stock, not only because of successful adaptations but also because of a trend toward flame-proof requirements.

In recognition of this trend many of our pyroxylin competitors have installed, or are in the process of installing, calenders to produce vinyl resin products.

* * *

Our competitive position dropped sharply from 14.9% in 1945 to 6.2% in 1946 due to the termination of war business in which our products were widely used, because of the large scale entrance of new competitors in this field, and because we were in an unfavorable position with respect to resin supplies.

Our resin sources were B. F. Goodrich and the Bakelite Division of Carbide and Carbon from whom we were able to obtain only about one-third of our needs. Several competitors were able to do better because they contracted for their annual requirements, an opportunity that we turned down with Carbide and Carbon because of unsatisfactory requirements in the agreement, and because Goodrich had indicated that our requirements would be met without a contract.

* * *

Excerpts from Annual Competitive Report (1947), dated March 11, 1948, from Fabrics & Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

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The Department's over-all competitive position improved from 10.1% in 1946 to 10.8% in 1947. greater availability of raw materials permitted the recapture of substantial business lost during the period of more restricted supplies, and enabled the expansion of selected markets in which the du Pont position is strong.

The Fabrics Division's competitive position increased from 10.2% in 1946 to 10.9% in 1947 and was due to a freer supply of fabrics and other raw materials excepting resin and plasticizers. This permitted the regaining of substantial business in pyroxylin coated fabrics and shade cloth lost during the 1946 and earlier periods of short supply, and more than offset a position loss in resin, synthetic rubber, and natural rubber products.

* * *

Du Pont's competitive position in 1947 improved as a result of greater availability of raw materials, particularly greige goods. Our dollar sales volume increased 48% while that of competitors decreased 3.3%. On a comparative yardage basis, du Pont gained almost 10% over 1946, while competition dropped 26%. The decline in competitors' sales reflects an acceleration of the trend from pyroxylin to vinyl resin as a fabric coating. The high quality of our pyroxylin coated fabrics has permitted us to run counter to this trend and hold our position in the market while we are laying the groundwork for a more orderly exploitation of our own vinyl coated fabrics.

* * *

Despite higher selling prices, du Pont's 1947 dollar sales declined almost 10% from the 1946 level, resulting in a drop in our competitive position. The

5117

sales decrease was due mainly to curtailed demand for rubberized raincoats and the switch from rubber to resin coated fabrics for automotive upholstery.

The Hodgman Rubber Company has developed a synthetic rubber coated fabric for use in making up automotive heater and air conditioning tubing at a price which has enabled it to take the major share of this 500,000 yard market. At their present price we cannot successfully compete with this concern. We continue to receive the Cadillac business which approximates 40,000 yards (\$30,000) annually.

* * *

AUTO MANUFACTURERS - Sales to this industry were \$19,797,000, an increase of 84% over 1946, of which 54% was due to volume and 30% to price. Our competitive position improved from 37.1% in 1946 to 41.5% in 1947, largely due to uninterrupted production by General Motors as they were closed by strikes through most of the first quarter of 1946.

* * *

Government's Exhibit No. 1384

Excerpts from Annual Market Survey (1948), dated April 15, 1949, from Fabrics and Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

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AUTOMOTIVE - 1948 shipments to manufacturers of passenger cars, trucks, busses, tractors, motorcycles and automotive accessories are estimated at 15 million yards valued at roughly \$20 million, increasing 11% in yards and 25% in value over the 1947 level largely as a result of a 10% greater production of passenger cars and trucks.

Du Pont 1948 sales of 3,161,000 yards valued at \$4,500,000 accounted for 21% of the total, and were greater than those of any individual competitor. Other major suppliers include Ford (who manufactures for own requirements) with about 13% of the market, Textileather 12%, U. S. Rubber 10%, Columbus Coated Fabrics 8%, and Goodall-Sanford, Landers and Weymouth 7% each.

Our competitive position in 1948 was about the same as in the previous year. (General Motors accounted for over 80% of our volume in both periods). Also, there was no material change in the competitive position of other major suppliers.

* * *

Normally, the automotive business shows a seasonal decline in the fall months during change-over to new models. Style influence is a strong factor in determining the consumption of coated fabrics for passenger automobiles. For instance, because of a change in contour of seat backs in some 1949 models of General Motors' cars, coated fabrics could not be applied satisfactorily and were replaced with uncoated body cloth resulting in a reduction in usage of about 18%. Then, too, some manufacturers, for example, Kaiser-Frazer, use no coated fabrics whatsoever.

5419

Excerpt from Annual Market Survey (1949), dated April 14, 1950, from Fabrics and Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

Our percentage of the market declined in 1949, principally because we did not obtain as large a share of General Motors' requirements for truck upholstery due to price competition.

5-120

Excerpts from Annual Market Survey (1950), dated April 11, 1951, from Fabrics and Finishes Department to Executive Committee of E. I. du Pont de Nemours and Company

Automotive - This includes original equipment and sales to the accessories trade. Industry consumption, estimated at \$40 million, is up 33% over \$30 million in 1949. Du Pont sales are up 51%.

Total domestic passenger car and truck production hit an all-time high of 8 million units, up 28% over 1949. General Motors, our largest customer, produced 36% more units.

* * *

The following data compare Du Pont sales with estimated industry performance:

	<u>1949</u>	<u>1950</u>	<u>% over 1949</u>
Du Pont	\$26,338,000	\$35,351,500	34.2
Industry	64,239,000	83,573,000	30.1

The increase in sales by the industry reflects the unprecedented production rate of the automotive manufacturing industry.

Our better performance is due in part to the effect of the Chrysler strike on other suppliers during the first half of the year, we having but a relatively small share of Chrysler business.

The major companies sharing in this market are listed below, with estimated market penetration. Of interest is the decreased per cent of the market obtained by Pittsburgh, who were affected by the Chrysler strike.

	<u>% of Market</u>	
	<u>1949</u>	<u>1950</u>
Pittsburgh (Ditzler, Forbes Varnish)	21.4	18.8
* Ford Motor Co.	13.7	15.0
Rinshed-Mason	6.2	7.6
Cook Paint & Varnish	4.3	4.4

5.121

	% of Market	
	1949	1950
American-Marietta (Ferbert-Schorndorder)	1.7	2.2
Devoe (Jones-Dabney, Beckwith-Chandler)	3.1	2.0
Valspar Corp.	2.2	1.6
* International Harvester	2.1	1.5
Sherwin-Williams (Acme)	0.9	1.4
W. P. Fuller (Nason)	0.5	0.6
Glidden	0.7	0.4
Arco	0.3	0.1
O'Brien Varnish	0.2	0.1
All Others	1.7	2.0
Total Competitors	59.0	57.7
Du Pont	41.0	42.3
	100.0	100.0

* Produce a large part of their own requirements.

Government's Exhibit No. 1387

**DU PONT SALES OF FINISHES (PRODUCTS OF FINISHES DIVISION
TO
THE AUTOMOBILE INDUSTRY**

	<u>1938</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1946</u>	<u>1947</u>
Percentage of requirements of all auto manufacturers supplied by Du Pont Finishes Div.	46.5% ^{1/}	42.1% ^{2/}	43.8% ^{3/}	45.6% ^{4/}	37.1% ^{5/}	41.5% ^{6/}
Du Pont Finishes Division dollar sales to all auto manufacturers	\$6,688,000 ^{1/}	\$8,444,000 ^{2/}	\$11,600,000 ^{3/}	\$13,400,000 ^{4/}	\$10,762,000 ^{5/}	\$19,797,000
Du Pont Finishes Division Sales to General Motors ^{8/}	\$6,193,000	\$8,765,000	\$11,727,000	\$13,525,000	\$10,430,000	\$18,938,000
Du Pont Sales to General Motors as a percentage of Du Pont sales to all auto manufacturers	92%	100%+	100%+	(Note A) 100%+	(Note B) 97%	(Note 95%)

SOURCE:

NOTE A: 1947 Annual Competitive Report, supra, further states (p 7): ". . . sales to other than General Motors totaled . . . \$994,000 in 1941, 7% of total sales."

NOTE B: 1946 Annual Competitive Report, supra, further states (p. 3): "Our competitive position declined from 45.0% in 1945 to 37.1% in 1946 because of a strike in General Motors plants during the first quarter of 1946. During this period, other auto manufacturers, supplied largely by competition, maintained production at fairly satisfactory rates . . . Du Pont Finishes Division dollar sales to accounts other than General Motors reached \$2,014,000 [19% of Du Pont's reported total Finishes sales to all auto manufacturers]. . . ."

NOTE C: 1947 Annual Competitive Report, supra, further states (p 7): ". . . In 1947 sales to other than General Motors totaled \$3,446,000, 17% of total sales . . ."

Government's Exhibit No. 1388

GENERAL MOTORS' PURCHASES (IN DOLLARS)
 FROM DU PONT AND COMPETITORS OF DU PONT
 (INVOLVING PRODUCTS PRODUCED BY DU PONT AND OTHERS AS COMPETITORS IN THE MARKET)

Revised 6/23/53

	1946				1947			
	From Du Pont	From Competitors of Du Pont	Total GM Purchases	% Purchased From Du Pont	From Du Pont	From Competitors of Du Pont	Total GM Purchases	% Purchased From Du Pont
FINISHES								
Paints, Enamels, Primers, and Lacquers ¹	\$ 7,939,163	4,104,669	12,043,832	65%	\$ 14,974,149	6,844,012	21,818,161	68%
Pyroxylin ²		37,577	37,577	0%		105,482	105,482	0%
Thinner	2,479,429	291,219	2,770,648	89%	3,952,526	582,796	4,535,322	89%
Total	\$10,418,592	4,433,465	14,852,057	70%	\$ 18,926,675	7,532,290	26,458,965	71%
FABRICS								
Upholstery & Trim (Fabrikoid, Fabri- lite & Cavalon from Du Pont, "Imitation Leather" from Competitors)	\$ 2,032,397	695,976	2,728,373	74.5%	\$ 3,573,121	2,393,137	5,966,258	60%
ANTIFREEZE	\$ 668,985	20,833	689,618	97%	\$ 1,710,186	42,850	1,753,036	97.6%
TOTAL	\$ 13,119,974	5,150,274	18,270,248	72%	\$ 24,209,982	9,968,277	34,178,259	70%

SOURCE:

Du Pont Sales to General Motors: From Summary submitted by Du Pont, in response to grand jury subpoena, entitled: "Sales by Product to General Motors Corp. and 100% Owned Subsidiaries."

GM Purchases from Competitors of Du Pont: From General Motors' tabulation of "Sales and Purchase Data in Response to Federal Grand Jury Subpoena."

¹/ "Paints, Enamels, Primers and Lacquers" includes all items listed in Du Pont's "Sales by Products to General Motors" summary which are classified in it under the heading "Finishes Products," except thinners and heavy-bodied cements and pyroxylin solutions.

²/ No data available on whether Du Pont produces this item which is listed in General Motors' grand jury exhibit above as "Pyroxylin" in general category of "Finishes."

GENERAL MOTORS' PURCHASES OF ANTIFREEZE
FROM DU PONT AND OTHER SUPPLIERS WHO SOLD
\$500 OR MORE TO GENERAL MOTORS DURING 1946

5424

<u>Supplier</u>	<u>Dollar Volume</u>	<u>% of Total Purchases</u>
E. I. du Pont de Nemours and Company.	\$668,985	97
Grimm-Hansen-Treland Co., Inc.	4,163	
Hoosier Solvents & Chemical Co.	1,789	
Dix Auto Electric Service, Inc.	1,649	
Fornbrook Auto Supply, Inc.	1,441	
W. H. Barber Co.	1,381	
Chapin Oil Co.	1,128	
Carbide & Carbon Chemicals Corp.	761	
Commercial Solvents Corp.	680	3
Western Solvent & Chemical Co.	679	
Automobile Equipment Co.	654	
Motor Tire & Vulcanizing Co.	630	
Lee Finishing	557	
Sheldon Tire Co.	551	
Mich-I-Penn Oil & Grease Co.	520	
All Others (43 Suppliers)	4,250	
TOTAL PURCHASES		\$689,818

Source: (a) General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - Schedule I-3d.

(b) Summary of Sales of "Antifreeze" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena, entitled "Sales by Products, to General Motors Corp. and 100% Owned Subsidiaries".

GENERAL MOTORS' PURCHASES OF ANTIFREEZE
FROM DU PONT AND OTHER SUPPLIERS WHO SOLD
\$500 OR MORE TO GENERAL MOTORS DURING 1947

5425

<u>Supplier</u>	<u>Dollar Volume</u>	<u>% of Total Purchases</u>
E. I. du Pont de Nemours and Company	\$1,710,186	97.6
Miller Auto Supply & Equipment Co.	10,634)
Grimm-Hansen-Treland, Inc.	9,575)
M. D. Larkin Co.	2,799)
Automobile Equipment Co.	2,498)
Buhl Sons & Co.	1,473)
Speedway Petroleum Corp.	1,395)
Western Solvent & Chemical Co.	1,333)
Automotive Electric Service Corp.	1,330)
Dix Auto Electric Service Co.	957)
Deluxe Motor Service	853)
U. S. Industrial Chemicals Co.	810)
Terminal Sales Co.	637)
Sheldon Tire Co.	613)
Cumings Bros.	609)
H. Channon Co.	517)
All Others (81 Suppliers)	6,807)
TOTAL PURCHASES \$1,753,036		

Source: (a) General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - Schedule I-2d.

(b) Summary of Sales of "Antifreeze" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena, entitled "Sales by Products to General Motors Corp. and 100% Owned Subsidiaries" covering the years of 1938-1941 and 1946-1947.

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5426

GENERAL MOTORS CORPORATION
PER CENT AND DOLLAR VOLUME OF PURCHASES
OF
UPHOLSTERY AND TRIM

1946

(Round Numbers)

TOTAL DOLLAR PURCHASES \$2,728,000

E. I. du Pont
de Nemours & Co.

74.5%

\$2,032,000

Textileather

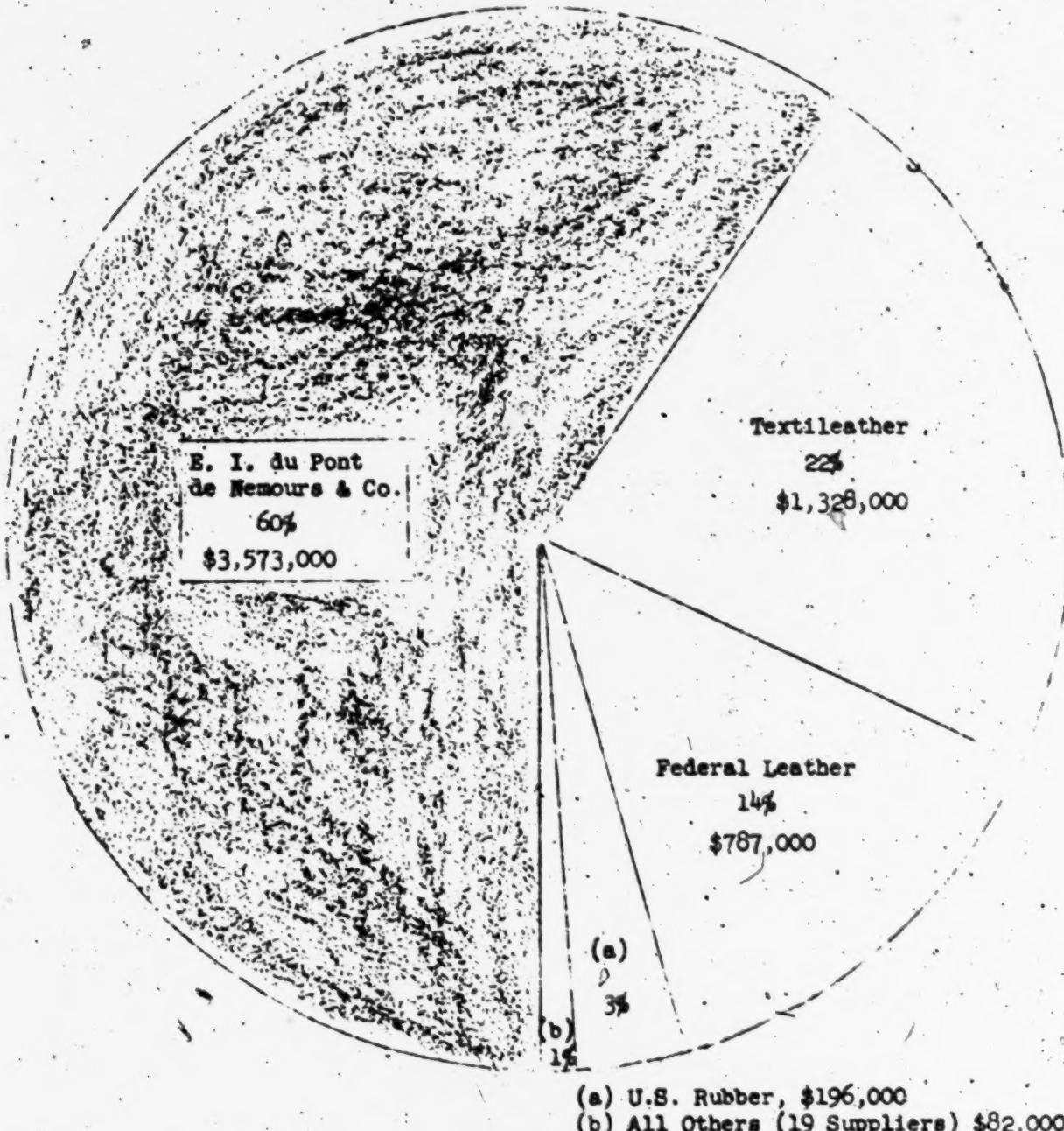
GENERAL MOTORS CORPORATION
PER CENT AND DOLLAR VOLUME OF PURCHASES
OF
UPHOLSTERY AND TRIM

1947

5427

(Round Numbers)

TOTAL DOLLAR PURCHASES \$5,966 000



Source: (1) General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - "Imitation Leather" - Schedule I-2c

(2) Summary of Sales of "Fabrikoid, Fabrilite and Cavalon" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena entitled "Sales by Products to General Motors Corp. and 100% Owned Subsidiaries" covering the years of 1938-1941 and 1946-1947.

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GENERAL MOTORS CORPORATION
PER CENT AND DOLLAR VOLUME OF PURCHASES
OF

PAINTS, ENAMELS, PRIMERS, LACQUERS, THINNERS, AND PYROXYLIN
FROM THE THREE LARGEST SUPPLIERS
FOR THE YEAR
1946

(Figures rounded to nearest thousand)

TOTAL DOLLAR PURCHASES \$14,864,000

E. I. du Pont
de Nemours & Co.

70%

\$10,430,000

Pittsburgh
Plate Glass Co.

4%
\$582,000

Rinshed-Mason Co.

13%

GENERAL MOTORS CORPORATION
 PER CENT AND DOLLAR VOLUME OF PURCHASES
 OF
 PAINTS; ENAMELS, PRIMERS, LACQUERS, THINNERS, AND PYROXYLIN
 FROM THE THREE LARGEST SUPPLIERS
 FOR THE YEAR
 1947

(Figures rounded to nearest thousand)

TOTAL DOLLAR PURCHASES \$26,470,000 [5429]

E. I. du Pont
 de Nemours & Co.
 72%
 \$18,938,000

Pittsburgh
 Plate Glass Co. 3%
 \$938,000

Rinshed-Mason Co.
 12%
 All
 Others* \$3,205,000
 13%
 \$3,389,000

* Approximately 500 Suppliers

Source: (a) General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - Schedule I-2b

(b) Summary of Sales of "Finishes Products" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena, entitled "Sales by Products to General Motors Corp. and 100% Owned Subsidiaries" covering the years of 1938-1941 and 1946-1947.

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March 16, 1931.

[S430]

Mr. Irene duPont, President,
E. I. duPont deNemours & Co.,
Wilmington, Del.

My dear Mr. duPont:-

I notice in the annual report of the
E. I. duPont deNemours & Co., signed by you, which has
been given considerable publicity, the following personal
reference:

"He desired to resign and sell his interest in the
Corporation to liquidate his personal indebtedness
which was very large and pressing."

There is evidently some mistake and I feel that
I should acquaint you with the facts:

On the evening of November 15th, a personal
friend of mine, representing the duPont interests, called
at my apartment and informed me that my resignation as
President of the General Motors Corporation was desired and
would be accepted - the reason given, that I was not in
sympathy with the policies of the controlling interests and
would not cooperate. I must and do plead guilty to the
charge.

Two days later, when I came to discuss the matter
with Mr. P. S. duPont and Mr. Rashob, I told them (and up to
that time they knew nothing of the situation) of the burdens
which I had assumed in attempting to correct the mistakes
and errors which had been made, for which I was in no way
responsible, and FROM THAT POINT we started to work out a
plan which would relieve me of my embarrassment and which
resulted in the duPont Securities Co. taking over my
General Motors holdings.

In our attempt to adjust to the new conditions,
I trust nothing will occur to destroy our friendship.

Very truly yours,

GENERAL MOTORS' PURCHASES OF
PAINTS, ENAMELS, PRIMERS, LACQUERS, THINNERS, AND PYROXYLIN
FOR THE YEARS 1946 AND 1947

5431

(Listing Suppliers of \$30,000 Worth or More)

	1946		1947	
	Dollar Volume*	%	Dollar Volume*	%
<u>Total - All Suppliers</u>	14,864,000	100	26,470,000	100
<u>E. I. du Pont de Nemours & Co.</u>	10,430,000	70.17	18,938,000	71.55

Supplied by Other than du Pont:

Rinshed-Mason Co.	1,934,000	13.01	3,205,000	12.11
Pittsburgh Plate Glass Co.	582,000	3.92	938,000	3.54
Pontiac Varnish Co.	188,000	1.26	264,000	1.00
Kay and Ess Co.	141,000	.95	229,000	.87
Ferbert Schorndorfer Co.	125,000	.84	293,000	1.11
R. A. Becker Co.	112,000	.75	131,000	.49
Roxaline Flexible Finishes, Inc.	108,000	.73	---	
Schenectady Varnish Co., Inc.	108,000	.73	248,000	.94
Standard Varnish Works	94,000	.63	108,000	.41
Parker Rust Proof Co.	61,000	.41	---	
M. B. Suydam Co.	56,000	.38	104,000	.39
Stanley Chemical Co.	54,000	.36	113,000	.43
Eastman Kodak Co.	48,000	.32	131,000	.49
Thresher Varnish Co.	47,000	.32	46,000	.17
Western Solvents & Chemicals Co.	46,000	.31	25,000	.09
Arco Co.	36,000	.24	196,000	.74
Barker Chemical Co.	30,000	.20	48,000	.18
Berry Bros., Inc.	---		36,000	.14
Forbes Varnish Co.	---		193,000	.73
Mansfield Paint Co.	---		56,000	.21
Parker Paint & Varnish Co.	---		39,000	.15

Standard Varnish Works	94,000	.03	108,000	.41
Parker Rust Proof Co.	61,000	.41	---	
M. B. Suydam Co.	56,000	.38	104,000	.39
Stanley Chemical Co.	54,000	.36	113,000	.43
Eastman Kodak Co.	48,000	.32	131,000	.49
Thresher Varnish Co.	47,000	.32	46,000	.17
Western Solvents & Chemicals Co.	46,000	.31	25,000	.09
Arco Co.	36,000	.24	196,000	.74
Barker Chemical Co.	30,000	.20	48,000	.18
Berry Bros., Inc.	---		36,000	.14
Forbes Varnish Co.	---		193,000	.73
Mansfield Paint Co.	---		56,000	.21
Parker Paint & Varnish Co.	---		39,000	.15
American Marietta Co.	---		38,000	.15
Jamestown Finishing Products, Inc.	---		35,000	.13
Michigan Chrome & Chemical Co.	---		35,000	.13
Glidden Co.	---		34,000	.13
Intercoastal Paint Co.	---		33,000	.12
Egyptian Lacquer Co.	---		30,000	.11
All Others (400+) suppliers	664,000	4.47	924,000	3.49

E. I. du Pont
de Nemours & Co.

74.5%

\$2,032,000

Textileather

14.5%

\$393,000

(b) (a)

5%

5%

\$134,000

\$146,000

(c)
1%

{a} Federal Leather
{b} U. S. Rubber
{c} All Others (10 Suppliers)

\$23,000

- Source: (1) General Motors Corporation tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - "Imitation Leather" - Schedule I-3c
- (2) Summary of Sales of "Fabrikoid, Fabrilite and Cavalon" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena, entitled "Sales by Products to General Motors Corp. and 100% Owned Subsidiaries" covering the years of 1938-1941 and 1946-1947.

GENERAL MOTORS CORPORATION

DETROIT, MICHIGAN

5432
[5432]

September 27, 1930.

520-6

Mr. E. K. Bolton, Chemical Director,
E. I. du Pont de Nemours & Co.,
Wilmington,
Del.

Dear Mr. Bolton:

We will be very glad to have one of your chemists visit with us to discuss the matters that you mention in your letter of September 24. We have some rather startling developments along lubrication lines which I think we can open up to you quite freely.

We know of no one to whom we would prefer to extend this courtesy, more than your own organization, for we look upon du Ponts as sort of grandpa to General Motors.

Perhaps you had better give me a little preliminary notice of the arrival of your representative so that we can be certain that our boys will be on hand.

Yours very truly,

R. D. Clements,
F. O. Clements,
Technical Director,
Research Laboratories.

E. I. du Pont
de Nemours & Co.

70%

\$10,430,000

Pittsburgh
Plate Glass Co.

4%

\$582,000

Rinshed-Mason Co.

13%

\$1,934,000

All
Others*

13%

\$1,918,000

* Approximately 500 Suppliers

Source: (a) General Motors Corporation Tabulations of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" - Schedule I-3b

(b) Summary of Sales of "Finishes Products" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena, entitled "Sales by Products to General Motors Corp. and 100% Owned Subsidiaries" covering the years of 1938-1941 and 1946-1947.

FEB:arm 11/8/48 2

5433

Melville G. Williams, Esquire
Chief, Chicago Office
Anti-Trust Division
United States Department of Justice
Suite 826 - 200 South La Salle Street
Chicago 4, Illinois.

NOV 13 1948

Re: Grand Jury Subpoena No. 9072 -
General Motors, du Pont, et al.

Dear Mr. Williams:

Since my letter to you dated September 17, 1948, setting forth certain understandings between us with respect to compliance with the above subpoena, General Motors Corporation has submitted to you its spot check for the month of June, 1948, and du Pont and U. S. Rubber Company have submitted, or expect within a few days to submit, the results of the checks for that month.

As a result of the information that has been furnished, it is now your desire that certain of the companies proceed to obtain additional information called for by paragraph 3 of the subpoena, and it is the purpose of this letter to state matters which are next to be investigated and reported upon by the respective companies.

General Motors Corporation

General Motors Corporation will investigate and report to you the following:

- a. The material called for in paragraphs 3 (a) and 3 (b) of the subpoena for the period from January 1, 1948, to August, 1948, inclusive.

The material called for in paragraphs 3 (c) and 3 (d) for the period from January 1, 1948, to August, 1948, inclusive, with respect to purchases from Bendix Aviation

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Corporation, North American Aviation, Inc., and Remington Arms Co., Inc. General Motors Corporation will accept as its purchase figures the reports of sales to it made under paragraphs 3 (c) and 3 (d) by du Pont, Kinetic, Ethel, and U. S. Rubber.

- c. The total annual purchases (in dollars) of each of the following products purchased by it and its subsidiaries from companies other than those listed in paragraph 3 of the subpoena specifying the names and amounts with respect to each company:

1. (Purchases from competitors of du Pont)

Coated Fabric

Paints, Enamel, and Primer

Solvents

Thinner

Pyroxylin

Adhesives

2. (Purchases from competitors of U. S. Rubber Company)

Tires and tubes with a breakdown

between original equipment and replacements.

3. (Purchases from competitors of Bendix)

Air Brakes

Automotive Brakes and Parts

Carburetors and Parts

Steering Gear Parts

Starter Drives

Any other product purchased from Bendix during the aforesaid period in a quantity comparable to the above items.

3157

4. (Purchases from competitors of North American Aviation, Inc.)

All products purchased during the aforesaid period from North American Aviation, Inc.

5. (Purchases from competitors of Ethyl Corporation)

All products purchased during the aforesaid period from Ethyl Corporation.

6. (Purchases from competitors of Kinetic Chemicals, Inc.)

All products purchased during the aforesaid period from Kinetic Chemicals, Inc.

7. (Purchases from competitors of Remington Arms Co., Inc.)

All products purchased during the aforesaid period from Remington Arms Co., Inc.

du Pont

Du Pont will investigate and report to you the following:

- a. The material called for in paragraphs 3 (a) and 3 (b) of the subpoena for the period

with

respect to the following products:

Coated Fabric

All products (without breakdown of items) of the finishes department.

- b. The material called for in paragraphs 3 (c) and 3 (d) for the period

with respect to purchases from Bendix, North American Aviation,

5436

Inc., and Remington Arms Co., Inc. du Pont
will accept as its purchase figures the reports
of sales to it made under paragraphs 3 (a)
and 3 (b) by General Motors, Ethel, Kinetic,
and U. S. Rubber.

3159

Source: (a) General Motors Corporation tabulation of "Sales and Purchases Data in Response to the Federal Grand Jury Subpoena" -- Schedule "I 3b," pp. 1-9, 11-15, and Schedule "I 2b," pp. 1-11, 15-19.

(b) Summary of Sales of "Finishes Products" submitted by E. I. du Pont de Nemours and Company in response to federal grand jury subpoena entitled, "Sales by Products to General Motors Corp. and 100% Owned Subsidiaries" covering the years of 1938-41 and 1946-47.

* Figures rounded to nearest \$1,000.

**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
ILLINOIS										
CHICAGO										
Automatic Electric, Inc.....			400(1)	200(1)						
Bell & Thorn Machine Co.....	1000(1)									
Borg & Beck.....	6000(1)			40000(1)						
Central Screw Co.....										
Chicago Screw Co.....	20000(1)							500		
Chromium Corp. of America.....										
Duro Metal Prod. Co.....			20000(4)							
Fairbanks Morse & Co.....	600(3)									
International Harvester Co.....			See totals on individual plants							
International Register Co.....				4000(2)						
O. D. Jennings & Co.....	500(1)									
Johnson Fare Box Co.....			1500(2)							
Kellogg Switchboard & Supply Co.	500(1)								HC 5000	
Lindberg Steel Treating Co.....	20000(4)									
Mills Novelty Co.....			3000(1)	5000(4)						
Stewart Warner Corp.....	150000(1)							25000		
Teletype Corp.	3500(1)		9000(1)	9000(1)						
Victor Adding Machine Co.....	2000(3)									
Western Electric Co.....	10000(1)							15000		
Union Special Machine Co.....										

- (1) R & H direct
- (2) R & H thru Chem. Dist.
- (3) A.C.Co. direct
- (4) A.C.Co. thru Bell & Gossett

5437-
5438

Sept. 16, 1937

CASE HARDENING SURVEY
CHICAGO OFFICE TERRITORY

INTRODUCTION

The object of this report is to present data and information compiled by representatives of the Chicago Office in contacts with all of the major users and most of the minor users of salt bath case hardening processes in this territory as of September 4, 1937. Specifically, we have endeavored to obtain answers, insofar as possible, to the following six questions proposed by Dr. D. A. Holt:

1. What are the limitations of the cyanide bath and what operations has it been found uneconomical for, which have been successfully carried out in other baths?
2. Which deep hardening bath is in use and the reasons for the selection?
3. What are the details of the treating conditions and results obtained with straight cyanide and the deep hardening bath? We are particularly interested in data on case depth per unit of time, comparative costs based on dragout, replenishment, fuel and pot life.
4. Is a scumming bath preferred and has the user noted any difference in the manipulation of scummed cyanide and deep hardening baths?
5. What is the maximum cost per pound; time and temperature of treatment in deep hardening baths which is competitive with pack hardening?
6. Would a large unit, such as the Ajax Hultgren type, which could be economically and safely operated, be desirable, and if so, what size would be preferred?

- (a) Increased pot life
- (b) Lower fuel costs
- (c) Greater comfort for the operator from diminished surface heat radiation and from almost complete absence of fumes.

—3—

5. There is very little interest in the possible use of deep-hardening salt baths to replace any pack hardening operations; in fact, the belief is expressed that this is impractical.
6. Very little consideration is being given to Ajax-Hultgren type furnaces for continuous salt bath hardening because the interest of those who perform operations where such equipment could be so used is principally in the replacement of salt baths with gas furnaces.

—4—

CONCLUSIONS

1. The concensus of opinion among metallurgists of the automotive industry indicates that gas carburizing for shallow cases is much cheaper than the use of salt baths and is physically practical for mass production in continuous furnaces (or for batch production in rotary or small furnaces). For the moment attention is being focused only on large continuous operations where refinements are still necessary but there are few who doubt the ultimate success of this process for both purposes.
The trend towards gas hardening for *all* purposes is thought to be sound, primarily because of the economies of continuous operation whereby labor costs are lowered.
2. It is estimated that during a period of from two to

three years, equipment and process changes now in progress will be completed. Due to these changes our annual loss of Sodium Cyanide sales ("Cyanegg" and mixtures) will be about 1,750,000 lbs. (equivalent to 1,078,500 lbs. of 100% Sodium Cyanide) to shallow case gas carburizing but only about 150,000 lbs. (equivalent to 133,500 lbs. of 100% Sodium Cyanide) to deep-hardening salt baths. This statement is made to emphasize the preponderantly greater sales we stand to lose to gas furnaces than to accelerated salt baths once these contemplated changes have been made. (See Tables II and III)

3. In other words, the tendency among the present large users of salt bath hardening materials is towards the much greater use of gas carburizing practice. In the interim deep-hardening baths will make some inroads on our cyanide sales, but as indicated we believe this condition to be but temporary.
4. Specifically, our greatest losses of Sodium Cyanide sales, especially mixtures, will be at the Ford Motor Co. and Pressed Metals of America, Inc. where present programs call for almost complete substitution by gas carburizing.

—5—

NOTE ON TABLES

In the following tables it has been necessary for us to estimate, where accurate information could not be secured, the proportion of the consumption of 96/98% Sodium Cy-

anide being used for case hardening purposes where both plating and case hardening are done.

A. C. STEPAN
CHICAGO DISTRICT MANAGER

R. B. K'Burg

By: R. B. K'Burg

RBK:HF

cc: C. L. Wiswall
R. O. Humphrey (3)
D. A. Holt
W. M. Gager
A. C. Stepan
R. B. K'Burg
Trade Analysis
Chicago File

Note: Italics indicate signature. A check mark appears after R. O. Humphrey (3).

TABLE I

ESTIMATED ANNUAL CONSUMPTION OF CASE HARDENING SALTS
BY MAJOR CITIES AND BY STATES

	96/98% NaCN		75% NaCN		45% NaCN		30% NaCN		Aerocase	Perliton	Holden	Parkcase
	R&H	Comp.*	R&H	Comp.	R&H	Comp.	R&H	Comp.				
CHICAGO	191,500	22,600	14,900	—	53,200	25,000	—	—	40,000	500	5,000	—
ILLINOIS (excl. Chicago)	49,600	500	2,400	—	39,100	—	—	—	68,500	6,200	25,000	—
INDIANA	142,600	500	1,700	—	21,000	2,300	—	—	—	500	—	—
DETROIT	288,200	35,000	1,139,000	2,500	451,500	5,000	111,000	10,000	132,000	465,000	40,000	40,000
MICHIGAN (excl. Detroit)	173,100	39,000	126,400	—	813,600	32,300	—	—	5,000	500	319,000	45,000
MILWAUKEE	8,300	3,000	5,500	8,000	8,000	33,000	—	20,000	5,000	100	300	10,000
WISCONSIN (excl. Milwaukee)	4,800	—	45,500	—	18,300	5,200	—	—	—	6,400	3,600	—
MINNESOTA	1,500	1,700	1,000	1,000	6,300	11,200	—	—	—	—	—	—
TOTAL	859,600	102,300	1,336,400	11,500	1,411,000	114,000	111,000	30,000	250,500	479,200	392,900	95,000

*Competition

In addition to the above, there are used about 30,000 lbs. of Chapmanizing Compound, 15,000 lbs. of 60% Sodium Cyanide, small amounts of 27% Sodium Cyanide and of "DuCase."

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TABLE II—Probable Annual Loss of Sales After
Two or Three Years of "Cyanegg" and Cyanide
—Containing Salts where Substitution by Gas
Carburizing is Known to be in Progress.

1. "Cyanegg"	95,000 lbs.
2. 75% Cyanide-Chloride Mixture.....	800,000 lbs.
3. 45% Cyanide-Chloride Mixture.....	870,000 lbs.
4. Holden Light Case.....	300,000 lbs.
5. Perliton	150,000 lbs.

Table III—Probable Annual Loss of Sales After
Two or Three Years of "Cyanegg" and Cyanide
—Containing Salts Where Substitution by Deep-
Hardening Salt Baths is known to be either in
Progress or Seriously Contemplated.

1. "Cyanegg" to Perliton.....100,000 lbs.
2. 75% Cyanide-Chloride Mixture to Perliton. 30,000 lbs.

**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
ILLINOIS										
AURORA										
Indep. Pneum. Tool Co.....	500(3)					1000				
Stephens-Adamson Mfg. Co.....	200(2)									
EAST MOLINE										
International Harvester Co.....	500(1)									
DECATUR										
Oakes Products Corp.....						30000				
HARVEY										
Buda Mfg. Co.....							5000			
Perfection Gear Co.....	6000(1)									
MOLINE										
Deere & Co.....	16000(1)			3000(1)						Experimenting
MORTON										
Getz Power Washer Co.....	300(1)			600(1)						
NO. CHICAGO										
Oakes Products Corp.....										Experiment. HC 25000
PEORIA										
Altorfer Bros. Co.....							1500			
Caterpillar Tractor Co.....	6000(1)									
ROCKFORD										
Amer. Cab Hdw. Corp.....										
Atwood Vacuum Mach. Corp.....										
Barber Colman Co.....	2000(1)									
Eleco Tool & Screw Corp.....			3500(1)							
Frederick Steel Treating Co.....			2000(1)							
O. T. Muehlmeyer Heat Treat. Co.	500(1)									
National Lock Co.....	2000(1)									
Rockford Drilling Machine Co.....										
Spengler Loomis Mfg. Co.....	1500(1)									
Sundstrand Mach. Tool Co.....	100(1)									
ROCK ISLAND										
International Harvester Co.....	5000(1)									
Rock Island Arsenal.....	1000(1)									
C. U. Scott & Son.....	4500(1)									
WEST PULLMAN										
Ingersoll St. & Disc. Div. B. W.....	4000(1)			12000(1)						

- (1) R & H Direct
 (2) R & H thru Chem. Dist.
 (3) A. C. Co. direct

CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
MICHIGAN										
DETROIT										
Acme Steel Treating Co.....				2000(5)						
Allied Products Corp.....	500(5)									
Anderson Steel Process Co.....	1000(7)									
Auto City Steel Treating Co.....	1000(5)									
Brown McLaren Mfg. Co.....	1200(2)									
Budd Wheel Co.....	2000(1)			80000(1)						
Burroughs Add. Mach. Co.....		65000(1)			3000					27% NaCN 500(5)
Cadillac Motor Car Div. GMC.....							15000(?)			60% " 15000(5)
Chevrolet Gear & Axle Div. GM....	5000(1)						100000			
Chrysler Corp.	25000(1)	200000(1)								27% " 1000(5)
Comm'l Steel Treating Co.....	25000(5)									Chapman Comp. 10000
Commonwealth Industries, Inc.....		3000(2)								
Detroit Bevel Gear Co.....			12000(1)							
Detroit Gear & Mach. Div. B. W....	50000(1)							20000 LC		
Detroit Steel Treating Co.....				3000(5)						
Ex-Cell-O-Corp.	1000(5)								10000	
Ford Motor Co.	50000(1)*	850000(1)	450000(1)				Over			
Gemmer Mfg. Co.....							100000			
General Steel Treating Co.....	500(5)						90000	50000		
Hudson Motor Car Co.....	120000(1)						15000	100000		
Hupp Motor Car Corp. (Closed)....										
Kelsey Hayes Wheel Co.....									30000	
Lincoln Engineering Corp.....				18000(1)						
Long Mfg. Div. Borg-Warner.....	25000(1)	12000(1)								
Motor Products Corp.....	500(4)									
National Machine Prod. Co.....						10000(6)				
Packard Motor Car Co.....										
Service Heat Treating Co.....	3000(3)									
Standard Heat Treating Co.....			1500(1)	12000(1)						
Universal Products Corp.....	6000(5)		2500(5)							
Vincent Steel Process Co.....	3000(1)			3000(1)						
Whitman & Barnes Co.....		500(1)								
							7000			
									10000 LC	
									10000 HC	

- (1) R & H direct
- (2) R & H thru Wagner
- (3) R & H thru E-C
- (4) R & H thru Udylite
- (5) French thru Park
- (6) A.C.Co. direct
- (7) A.C.Co. thru F.B.Stevens

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**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
MICHIGAN										
ADRIAN										
Schwarze Electric Co.....	1000(1)									
ALLEGAN										
Blood-Bros. Mch. Co.....	8000(4)									
BAY CITY										
Chevrolet-Bay City Div.GM.....	100000(1)								5000 LC	
BENTON HARBOR										
New Products Corp.....			500(6)							
BIG RAPIDS										
Hanchett Mfg. Co.....							500			
BUCHANAN										
Clark Equipment Co.....	15000(1)									
FLINT										
AC Spark Plug Div.GM.....	15000(1)			4000(5)						
Buick Motor Div. GM.....	10000(5)								300000 LC 20000	
GRAND HAVEN										
Ottawa Steel Products Co.	300(2)									
GRAND RAPIDS										
Knape & Vogt Mfg. Co.	2000(2)									
Keeler Brass Co.	35000(1)									
National Brass Co.				1200(1)						
JACKSON										
Frost Gear & Forge Co.	20000(5)								4000 LC	
Ryerson & Haynes, Inc.		800(1)								
Teer-Wickwire & Co., Inc.										
KALAMAZOO										
Fuller Mfg. Co.	500(4)			3000(4)						
LANSING										
Olds Motor Works Div. GM....			25000(5)							
Motor Wheel Corp.	1000(3)									
Reo Motor Car Co.	1000(3)									
LAWTON										
Stearns-Stafford, Inc.	500(4)									
MT. CLEMENS										
Mt. Clemens Tool & Gear Corp.			1500(1)						60% NaCN 600(1)	

- (1) R & H Direct
- (2) R & H thru J. C. Miller
- (3) R & H thru Carrier Stephens
- (4) A.C.Co. direct
- (5) French (Hardy) thru Park
- (6) Dutch thru Houghton

3170

512

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**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
MICHIGAN										
MUSKEGON										
American Coil Spring Co.....				300(2)						
Brickner-Kropf Mch. Co.....					200					
Continental Motors Corp.....	2000(1)	25000(1)								
Muskegon Motor Spec. Corp.....	18000(1)									27% NaCN 2000(2)
OXFORD										
Master Machine Gear Co.....				10000(1)						
PONTIAC										
General Motors Truck Corp.....	2000(1)				5000					
Pontiac Motors Div. GM.....	60000(1)									
PORT HURON										
Pressed Metals of America.....				500000(1)						
SAGINAW										
Chevrolet Parts Mfg. Div. GM.....	20000(2)			300000(1)				LC	10000(1)	
Columbia Mills, Inc.....										
Lufkin Rule Co.....		1000(1)								
Nelson Bros. Co.....		400(1)								
Saginaw Steering Gear Div. GM....									25000	
ST JOSEPH										
St. Joe Machines, Inc.....				600(1)						

(1) R & H Direct

(2) French (Hardy) thru Park

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**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
INDIANA										
FORT WAYNE										
General Electric Co.....	500(2)							500		
Horton Mfg. Co.....										27% NaCN 500(3)
International Harvester Co.....	120000(1)			2000(3)		600(1)				
Griscer Industries										
GOSHEN										
Penn Electric Switch Co.....	500(1)	700(1)	1000(1)							
LOGANSPORT					300(3)					
Logansport Machine Co.....										
SOUTH BEND										
Bendix Products Corp.....	12000(1)			20000(1)						
Oliver Farm Equipment Co.....			1000(1)							
Studebaker Corp.	10000(1)									

(1) R & H direct

(2) French thru Hardy direct

(3) French (Hardy) thru Park

3172

13

545
GHC

5150

**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
WISCONSIN										
MILWAUKEE										
Allis-Chalmers Mfg. Co.....	300(1)									
Briggs & Stratton Mfg. Co.....	5000(1)									
Cutler Hammer, Inc.....		5500(1)								
Harley Davidson Motor Car Co.....				5000						
International Harvester Co.....	500(1)									
Jambor Tool & Stamping Co.....	3000(3)		3000(3)							
Turner Heat Treating Co.....	2500(1)		8000(1)							
Wesley Steel Treating Co.....		8000(2)	30000(2)	20000(2)			Little	Little		Chapman Comp. ?

(1) R & H direct

(2) A. C. Co. direct

(3) Dutch thru Houghton

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CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION

Customer and Location	96/98%	75%	45%	30%	DuCase	Aerocase	Perliton	Holden	Parkcase	Other Materials
WISCONSIN (Excl. Milwaukee)										
CLINTONVILLE										
Four Wheel Drive Auto Co.....				2500(1)						
GREEN BAY										
Northwest Engineering Co.....	300(1)					800(1)				
KENOSHA										
Mac Whyte Co.....										
Nash-Kelvinator Corp. Nash Div.	4500(1)	45000(1)	15000(1)					5000		
MADISON										
Madison Kipp Corp.....			500(1)							
NEENAH										
Kimberly Clark Corp.....				800(1)						
RACINE										
Andis Clipper Co.....							400			
J. I. Case & Co.....				2000(2)						
Twin Disc Clutch Co.....							1000			
RIPON										
Barlow & Seelig Mfg. Co.....					Pending					
WEST BEND										
Pick Mfg. Co.....				2000(3)						
OSHKOSH										
Wisconsin Axle Co.....				1200(4)				3600 HC		

- (1) R & H direct
 (2) A.C.Co. direct
 (3) Dutch thru Houghton
 (4) French (Hardy) thru Park

**CUSTOMERS AND POSSIBLE PROSPECTS FOR CASE HARDENING
AND HEAT TREATING MATERIALS OF ANY KIND
ESTIMATED ANNUAL CONSUMPTION**

<u>Customer and Location.</u>	<u>96/98%</u>	<u>75%</u>	<u>45%</u>	<u>30%</u>	<u>DuCase</u>
MINNESOTA					
MINNEAPOLIS					
Getchell Steel Treating Co.....	1000				
	(2) & (3)		5000(5)		
Hart-Carter Co.		2000	10000		
		(1) & (7)	(1) & (7)		
Twin City Steel Treating Co.....	1200(7)		1200(7)		
FARIBAULT					
Nutting Truck Co.....			500(4)		
HOPKINS					
Minn. Moline Power Impl. Co.....	500(3)				
	500(6)				
MANKATO					
Truth Tool Co.			800(3)		

(1) R & H Direct

(2) R & H thru Northern Machinery

(3) R & H thru Frost Naus

(4) R & H thru T. K. Gray

(5) A C. Co. thru Thompson Hayward

(6) A C. Co. thru C. B. Lyon

(7) Dutch thru Houghton

ILLINOIS
CHICAGO

Automatic Electric Co.

Case hardening operations at this plant are very limited, and in the one pot which they operate, using cyanide, they employ 75% and 45% Cyanide-Chloride Mixtures purchased from us. In view of the little salt bath hardening operations carried on here no information of value was obtained.

Bell & Thorn Machine Co.

They recently installed an Ajax-Hultgren furnace and began operation with "Cyanegg". It is expected that this furnace will be operated only at infrequent intervals, so that their salt bath operations will always be small. No information of any consequence was developed here.

Borg & Beck Division—

Borg-Warner Corporation

They use a considerable quantity of cyanide purchased from us for case hardening operation and apparently are not considering the use of accelerated salt baths at the moment. They have had in mind trials of Perliton, but are giving no consideration to it now. In view of this there is no data to obtain as to their interest or use of deep hardening salt baths.

Central Screw Co.

We have very little information as to the extent of hardening operations here, but it is judged to be very small. They have one cyanide pot, probably of small capacity and in which they are using cyanide purchased from an unknown source. Later developments

may disclose the nature of their operations.

Chicago Screw Co.

The last report made on this concern (by O'Donnell #314 of 4/29/37) indicates no present interest in accelerated salt baths, and they continue to purchase "Cyanegg" from us for case hardening purposes. Consequently we have no information showing their interest in deep

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CHICAGO (cont'd)

Chicago Screw Co.

hardening baths at the moment, and very little information of value can be given.

Chromium Corp. of America

The only salt bath operation carried out here is Chapmanizing for which, of course, they purchase Chapmanizing salt. They have never used anything but this so have no comparative date as to its merit along side of Sodium Cyanide. This work was formerly done for them by Lindberg Steel Treating Co., Chicago, and was Chapmanized which is the reason that this process was installed when the change was made. Technical data on this installation is very meager, but we are given to understand that they are quite satisfied with the process.

Duro Metal Products Co.

This concern is a large consumer of 45% Sodium Cyanide, and since this product appears to produce the desired results, they claim to have no interest in accelerated salt baths. Consequently we have no com-

parative information to offer, especially as they state, they intend to continue as at present.

Fairbanks-Morse & Co.

They use a very small amount of 96/98% Sodium Cyanide purchased from American Cyanamid Company, and because they are such small users no effort was made to check with them as to present and future operations.

International Harvester Co.

The main office of this company is in Chicago. Heat treating operations at the individual plants are reported under locations of such plants.

International Register Co.

They are small users of 45% Cyanide-Chloride Mixture purchased thru Chemical Distributors, and as such, claim not to be interested in competitive accelerated salt baths.

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CHICAGO. (cont'd)

D. D. Jennings & Co.

This concern is a very small purchaser of "Cyanegg" for case hardening purposes, consequently they were not in a position to offer us any assistance in this survey.

Johnson Fare Box Company

This is another small user of 75% Cyanide-Chloride Mixture, whom we did not contact for their views on the present trends in case hardening.

Kellogg-Switchboard & Supply Co.

They use a very small amount of "Cyanegg" for case

hardening and were not in a position to give us information along this line.

Lindberg Steel Treating Co.

This is the largest job heat treating shop in the Chicago area, and in common with other job heat treaters of any size, must be prepared to perform any type of hardening operation requested by the customer. Consequently they have most of the competitive processes available, although they were not in a position to give us much helpful data. The consumption of such products by a concern of this type is extremely variable and about which they would hesitate to make predictions.

Mills Novelty Co.

This concern uses several Sodium Cyanide Mixtures for case hardening operations, but as best as we can determine do not use accelerated salt baths nor are they interested in them. As the result we have no comparative data to offer upon this concern's activities.

Stewart-Warner Corp.

- 1 The bulk of the salt bath hardening operations conducted by this concern are done with "Cyanegg", although they still purchase an appreciable amount of material for use in accelerated salt baths. The latter is used on several parts, which must be hardened to a greater depth than normally would be obtained with straight cyanide.

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CHICAGO (cont'd)

Stewart-Warner Corp. (cont'd)

- 2 The accelerated salt bath in question is Aerocase

and has been operated for many years, the chief reason probably being that it was the only one of the accelerated salt baths on the market at the time their interest developed.

- 3 From straight cyanide they obtain a case of about 0.005" in 30 minutes at around 1550° F.—they nearly double this with Aerocase in about 40 minutes. Technical information here is difficult to secure and none was available on costs.
- 4 No information.
- 5 None of these operations are carried on competitively to pack hardening, therefore, we can offer no information along this line.
- 6 No information.

Teletype Corp.

- 1 In addition to their present operations with cyanide, they maintain one bath with an accelerated salt for one job where they require a deeper case than they feel can be obtained economically with cyanide.
- 2 The deep hardening bath they operate is Aerocase.
- 3 Cases up to 0.005" depth are all done in cyanide, but for anything deeper they expect to use Aerocase. A rough guess on their part as to the comparative cost of operating both baths was given as follows:

The operation of Aerocase costs about half again as much, to produce a case of 0.010" as a case of 0.005" in cyanide would cost.

- 4 Their chief objection to a scumming bath is that in their opinion it reduces the depth of case obtainable in any given time.

- 5 No information.
- 6 Ajax-Hultgren furnaces are installed and being installed here so it is evident that they approve of this type of equipment.

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Chicago (cont'd)

Union Special Machine Co.

All their hardening operations are done in Aerocase inasmuch as they require a deeper case than can be produced economically with Sodium Cyanide. This operation has been carried out here for a long time and they claim not to be interested in any other type of accelerated salt bath.

Victor Adding Machine Co.

They are not large users of Sodium Cyanide for salt bath operations but apparently are contented to continue with the use of this material in preference to accelerated salt baths. In view of this we have no information to offer in connection with the present survey.

Western Electric Co.

Although we have been informed that it is their intention to eliminate cyanide heat treating operations in their plant, they are still operating six small pots and are consuming "in the neighborhood of 10,000 lbs." of "Cyanegg" per year for this purpose. The elimination of cyanide hardening operations also precludes their interest in accelerated salt baths so we can offer little information along the lines of this report. At the present time they are attempting to replace cyanide pots with heavy duty gas carburizers, using a drip method

for introducing hydrocarbon liquids into the furnace chamber. This method has been none too successful for their present work, and it is possible that they will have to go to gas carburizing in the continuous type of furnace in order to completely satisfy all of their requirements. Meanwhile, however, they continue to use Sodium Cyanide, and they are not experimenting with accelerated salt baths.

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ILLINOIS (EXCLUSIVE OF CHICAGO)

AURORA

Independent Pneumatic Tool Co.

They buy 1000 lbs. Aerocase and 500 lbs. of Sodium Cyanide 96/98% from American Cyanamid Co. annually. Being very small consumers this concern was not called on recently and information requested in questions No. 1 to No. 6 not developed.

Stephens-Adamson Mfg. Co.

They buy 200 lbs. of Cyanegg from R & H annually. Being very small consumers this concern was not called on recently. Therefore information requested in questions No. 1 to No. 6 not developed.

BARTONVILLE

Keystone Steel & Wire Co.

Gager reported April 15, 1936 (Report #85) that they were operating a salt bath (mixture of potassium chloride and soda ash, with addition of 1% borax). Bath holds 3600 lbs. of salt which is mixed for them by Harshaw.

Papp has not called on them since.

DECATUR

MUELLER CO.

Last call on June 23, 1937, by Papp. They operate one Ajax Electric Heat Treat. Pot and use our No. 1 Heat Treat. Salt. (300 lbs. annually).

OAKES PRODUCTS CO.

1. Do not secure sufficient depth of case by use of Cyanide.
2. Use Aerocase bath because get greater depth of case in shorter time.
3. Operate their bath at 1600° F. In 20 minutes secure a case of 0.010". In 30 minutes they get over 0.012". They have no data on dragout, replenishment or fuel. They use pressed steel pots costing \$38.00 each, which last only 200 hours.
4. Prefer no scumming.
5. Cannot answer.
6. Have no opinion.

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ILLINOIS (Cont'd.)

HARVEY

BUDA MFG. Co.

Last report by Papp (5/25/37 #406) states have started using Perlite, say 5,000 lbs. annually. Papp intended following up, but has had no opportunity to date.

PERFECTION GEAR CO.

Last report by Papp (5/25/37 #405). Papp gives no information of any consequence in this report. Another call should now be made to develop the desired information.

EAST MOLINE**International Harvester Co.**

Their main job is to copper plate (especially cam shafts) for selective carburizing purposes. Work is all treated in gas furnaces. Only place they use Cyanide is for certain tools. They use less than 500 lbs. annually for heat treating. Could not furnish any information as to depth of case; etc.

MOLINE**Deere & Co.**

1. Cyanide does not give a deep enough case.
2. They are experimenting with Holden's Hardcase compound because it serves an inbetween job for them. They must have a 0.020" to 0.025" case. This is too much to attain with cyanide and carburization is difficult because small parts are in question. Generally, however, these would be carburized, but the job can now be done in two hours with Holden's Hardcase.
3. Mr. Bornstein, Metallurgist, states that he believes Holden's Hardcase costs them 25¢ per lb. Starting with a full pot for every 300 lbs. of work going thru, they must add 10 lbs. of Holden's Hardcase compound.
Temperature 1550° F. Time 2 hours.
Fuel cost 1¢ per pound of metal.
Use pressed steel pots which have a life of about 350 hours.
4. Prefer no scum.
5. No data other than that given in 3.
6. No.

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MORTON

GETZ POWER WASHER CO.

Papp has made no calls on them this year. They treat parts made of ~~1120~~ steel. So far this year they bought from us 400 lbs. of 45% and 200 lbs. of Cyanegg:

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ILLINOIS (cont'd)

NORTH CHICAGO

Oakes Products Corp.

- 1 All salt bath operations at this plant are now being conducted with accelerated salt baths because insufficient depth was obtained thru the use of straight cyanide in a reasonable length of time.
- 2 Holden Hard Case is being used extensively, although they are experimenting with Perliton largely as a matter of comparison. The reason for the selection of these two baths is not evident.
- 3 No information.
- 4 We have no information regarding this.
- 5 These processes are not competitive with pack hardening as used at this plant.
- 6 No information.

PEORIA

Altorfer Bros. Co.

Very little information is available as to this concern's activities because of their policy regarding interviews with Technical Departments. We know they are using

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Aerocase in a very limited way, but have no data as to the results obtained or costs of performing them.

Caterpillar Tractor Co.

We have no data on their specific heat treating operation, but they continue to purchase cyanide from us for this purpose. Papp's last Trade Report on this call is #425 of 6/24/37, which indicates that the use of cyanide for this purpose should continue.

ROCKFORD

American Cabinet Hardware Co.

Salt bath hardening operations at this plant are quite limited and Sodium Cyanide continues to be favored. We have no evidence of any interest on their part in accelerated salt baths.

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ROCKFORD, ILLINOIS (cont'd)

Barber-Colman Co.

Their hardening operations are limited to the production of quite shallow cases, which, of course, can be done best with Sodium Cyanide. Consequently they are not interested in deep-hardening salt baths nor in gas carburizing for this purpose.

Elco Tool & Screw Corp.

- 1 They are using accelerated salt baths to produce a case which appears could be done with the use of straight Sodium Cyanide. Consequently, it is doubtful if a cyanide bath offers any limitations which require the use of the deep-hardening type of bath.
- 2 Aerocase is the preferred product here and they claim the reason for its selection is that it fumes less than

straight Sodium Cyanide baths operating at the same temperature.

- 3 They were able to produce a case of 0.007" in 25 minutes at 1550° F. on self-threading type of screws which other producers heat treat with Cyanide. Inasmuch as all of their operations are Aerocase, they have no comparative costs for this process against cyanide.
- 4 Their baths all operate with a certain amount of scum which appears to be preferable, and which offers them no difficulties in manipulation.
- 5 This operation is not competitive to pack hardening.
- 6 They are unfamiliar with the Ajax Hultgren furnace.

Frederick Steel Treating Co.

- 1 This is one of the few job heat treating shops operating accelerating salt baths, and they do so in order to produce deeper cases than are normally obtained thru the use of straight cyanide.
- 2 In this case Perliton is being used, although we are informed that they had considerable trouble with the material when first tried out.

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ROCKFORD, ILLINOIS (cont'd)

Frederick Steel Treating Co. (cont'd)

- 3 In Perliton they obtain a case depth of about 0.010" in 30 minutes or 0.025" in 3 hours. In the latter case they are substituting such treatment for pack carburizing operations. Comparative costs between the operation of straight cyanide and Perliton were not available.
- 4 They would rather have no scum, but in operating Perliton must use it.
- 5 See No. 3.
- 6 They have no interest in the Ajax-Hultgren furnace.

O. T. Muehlmeyer Heat Treating Co.

This is a small job heat treating shop consuming a very limited amount of cyanide for case hardening purposes. They are not using accelerated salt baths and claim not to be interested in same. Consequently, information obtained here is of little value.

National Lock Company

This is our chief heat treating customer in Rockford and from Papp's Report #511 of 8/2/37, they apparently are quite satisfied to continue to use Sodium Cyanide for all of these operations. Inasmuch as they are not interested in accelerated salt baths, we have no comparative data along this line.

Rockford Drilling Machine Co.

- 1 They are operating an accelerated salt bath in order to produce a deeper case than can be economically produced in Sodium Cyanide.
- 2 Aerocase is the preferred material, but we have no information as to the reason for this selection in preference to any other deep-hardening bath.
- 3 They claim to obtain a case of 0.006" to 0.020" in Aerocase in 20 minutes, although it is more likely to be the former figure. No data was available on costs of Aerocase as compared to cyanide.
- 4 They had no objections to scumming baths.
- 5 No information.
- 6 No information.

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ROCKFORD, ILLINOIS (cont'd)Spengler Loomis Co.

- 1 On their particular type of work they are able to obtain

from cyanide a sufficient depth of case in a reasonable time so that the use of accelerated salt baths is not warranted.

- 2 They have made trials of Perliton, Aerocase and Holden materials, and have decided to continue with Sodium Cyanide.
- 3 They endeavor to obtain a case of 0.007" at 1600° F in about 20 minutes in an electric fired furnace. This enables them to get maximum pot life.
- 4 At the temperature which they operate scum does not remain, although even at normal temperatures, they would prefer to have no scum.
- 5 These operations are not competitive with pack hardening.
- 6 They claim to be unfamiliar with Ajax-Hultgren furnace.

Sundstrand Machine Tool Company

Heat treating operations here are extremely limited and they purchase a very small amount of "Cyanegg" annually for use on tools in the only salt bath in operation at this plant.

ROCK ISLAND

International Harvester Co.

Although they use a fair amount of "Cyanegg" for heat treating purposes, we have no late information as to their present operations. The last report of this concern is Papp's #804 of 9/24/36.

Rock Island Arsenal

Although they are experimenting with Perliton and have not arrived at a decision as to its merit, their heat treating operations in general are rather small. For

this they have used "Cyanegg" purchased from us for many years. Later calls will probably determine the value of Perliton for the type of heat treating done here.

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ROCK ISLAND, ILLINOIS (cont'd)

C. U. Scott & Sons Co.

- 1 This is a job heat treating shop where "Cyanegg" seems to be preferred for salt bath hardening.
- 2 They have made trials of Perliton and Holden Hard Case, but do not use them in regular practice.
- 3 In Cyanide they try to produce 0.003" to 0.004" case at 1500° F in 20 to 30 minutes. This seems to be the limit of their requirements since they recognize that deeper cases would require considerably greater time and would be impracticable.
- 4 They prefer not to operate a scumming bath.
- 5 None of this work is competitive to pack hardening, consequently we have no information.
- 6 The Ajax-Hultgren furnace has been considered here, but because of local power costs, it is thought to be entirely too expensive.

WEST PULLMAN

Ingersoll Steel & Disc Division

Borg-Warner Corporation

We have no late report on the activities of this concern, but in view of their increasing consumption, of cyanide purchased from us, it does not appear as though they are using accelerated salt baths. A later call will have to be made to determine whether any interest in deep hardening baths has developed.

INDIANA
FORT WAYNEGeneral Electric Co.

Very little heat treating with salt baths is done here and as most of this is tool room work, they use straight Sodium Cyanide. Consequently they appear to have no interest in accelerated salt baths.

Griseer Industries

Hardenings operations here are limited to one very small pot in which they use 30% Case Hardener purchased from us.

Horton Mfg. Co.

- 1 They were never able to obtain with our 75% Cyanide-Chloride Mixture sufficient depth for the one part which they harden. Consequently they installed an accelerated salt bath.
- 2 This bath is Perliton and there appears to be no particular reason why this bath was installed in preference to any of the other deep-hardening baths on the market.
- 3 No details were available.
- 4 Apparently the use of a scummed bath means very little to them, and they certainly are not at all concerned with any possible disadvantage a scum offers in manipulation.
- 5 No information.
- 6 No information.

International Harvester Co.

- 1 Accelerated salt baths do not appear to be a factor in this plant at the moment, but we are faced with considerable competition thru the installation of gas fur-

- naces for shallow case work.
- 2 Most of the accelerated salt baths have been tried, but no particular advantage over use of straight cyanide was found.
 - 3 Practically all of their cyanide work is for reheating truck transmission gears which have been carburized, and they figure the cost of reheating about 75¢ per hundred pounds.

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FORT WAYNE, INDIANA (cont'd)

International Harvester Co. (cont'd)

- 4 A small amount of scum appears on most of their cyanide baths at all times, and they consider this highly desirable and not in anyway interfering with the operation of the baths.
- 5 None of their operations with salt baths are considered competitive to pack hardening.
- 6 Ajax-Hultgren furnaces are of no consequence here. A large Holcroft gas furnace now being installed is expected to handle transmission gears on which they want a slightly deeper case than now being obtained with straight cyanide. Consequently they do not expect to replace all of their cyaniding operations with such a furnace, although it is reasonable to assume that should this operation work out as contemplated, efforts would be made later to change the remainder of the cyanided work to gas. They feel quite sure that in the interest of economy, this move should be made particularly in view of the large amount of this type of work which they have to do.

GOSHEN

Penn Electric Switch Co.

Heat treating operations here are on a very small

scale, and we sell them Sodium Cyanide for this purpose. It is not anticipated that accelerated salt baths will replace any of this work.

LOGANSPORT

Logansport Machine Co.

One small pot is operated here using French 45% Sodium Cyanide, and since their operations are so limited no call was made here.

SOUTH BEND

Bendix Products Corp.

Competition to our 45% Cyanide-Chloride Mixture here is not accelerated salt baths, but small rotary gas furnaces. In the latter type of equipment they are able to produce about 0.015" in 30 minutes, using city gas and ammonia mixtures. This produces a case

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SOUTH BEND, INDIANA (cont'd)

Bendix Products Corp. (cont'd).

which appears to be very similar to a cyanide case, and certainly adequate for their purposes. They expect to replace all of their cyaniding operations with this type of furnace in the next year or so. Gas is preferred because of its labor saving advantages and ease of operation.

Oliver Farm Equipment Co.

Salt bath operations are confined to the use of 75% Cyanide-Chloride Mixture purchased from us, and they do not anticipate the use of accelerated salt baths. The particular operation for which this is used has

been carried out for many years and is considered to be routine.

Studebaker Corporation

Although their Metallurgical Division believes that accelerated salt baths have a very definite place in the heat treating field, they have not been permitted to carry out any trials to confirm this, because of the receivership they have just passed thru and subsequent rulings which limit the amount of money which can be spent on experimental work. For the time being, however, they intend to continue to use Sodium Cyanide, which after all is not considered to be a major operation here. Gas furnaces will probably not be used unless Studebaker should resume the manufacture of their own transmissions and rear axles.

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MICHIGAN DETROIT

Allied Products Corporation

This is a small concern operating only one pot using 96/98% Sodium Cyanide purchased from Park Chemical Company. This pot is operated only intermittently, consequently their consumption of cyanide is extremely small. Because of these factors they are not experimenting with accelerated salt baths and no information of value was obtained.

See K'Burg's Trade Report #538 of 8/25/37.

Brown-McLaren Manufacturing Co.

This concern operates two pots using "Cyanegg" purchased from A. T. Wagner Company, but most of their work is hardening of tools. Consequently they have

little interest in other types of baths, and will probably continue to use "Cyanegg". No other information of interest was developed. Please see K'Burg's Trade Report #10 of 1/7/37.

Budd Wheel Company

1. A temporary operation carried out a few months ago, could not be hardened to the required depth in cyanide, and during this period they operated Perliton in one pot with complete satisfaction. This was merely a matter of obtaining case depth greater than produced by cyanide but less than obtained thru carburizing, and would probably be done again in Perliton if the operation should be resumed.
2. None.
3. They have no data comparing the cost of cyanide operation and Perliton nor do they have any on cyanide alone for publication.
4. Although recognizing some possible economic advantages of scum, they prefer to operate their own baths without this layer, but make no particular effort to control the amount of scum which appears normally.

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DETROIT (cont'd)

Budd Wheel Company (cont'd)

5. No information.
6. They operate one furnace of the Ajax Hultgren type, which has never been very satisfactory due to faulty construction, rather than inability to produce results. It has been their plan to install this type of furnace throughout the Heat Treat Department, but because of their adverse experiences they now intend to purchase more gas fired equipment. In general they be-

lieve that where only skin hardness is desired cyanide will always be used, at least, insofar as the Budd Wheel plant is concerned. See K'Burg's Trade Report #509 of 8/10/37.

Burroughs Adding Machine Co.

1. With the exception of one operation their work is peculiarly adapted to cyanide hardening only, and consequently, they do not intend to make any changes. The cyanide bath has been found uneconomical because of inability to produce a deep enough case for one job only and on this "Ducase" is used.
2. "Ducase" is used to produce a deeper case on medium steel parts used as dies in order to save them the expense of manufacturing or purchasing expensive and permanent dies.
3. They ran one trial with Holden's Light Case as compared to "Ducase" and discarded it because they found it deteriorated more rapidly. No data was available concerning the operating cost of both processes.
4. Scumming baths are objectionable.
5. No information.
6. They have only abstractly considered the Ajax-Hultgren type of furnace but have concluded that it has no particular advantages for them.

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DETROIT (cont'd)

Cadillac Motor Car Division General Motors Corporation

1. They have run in adjacent pots the special 60% Sodium Cyanide Mixture made for them by Park Chemical Company and Perliton, Holden Light Case, Holden Hard Case, and Parkcase. Right now they are operating Perliton at the rate of about 15,000 lbs. annually

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in order to produce a deeper case than could be obtained in cyanide. It should be emphasized that Perliton has not been definitely decided upon as permanent replacement for a portion of their cyaniding operations, but rather as being used pending the final evaluation of the results of all of these tests. In any event some accelerated salt bath will be used here for about half of the work which ordinarily is salt bath hardened.

2. (See #1).
3. No actual cost figures are available, but we were given to understand that they feel there is very little difference between cost of operating cyanide and Perliton. This belief is based upon comparable operating time, temperature, etc., although they do know that in the same time they obtain greater case depth with Perliton.
4. They prefer not to operate a scumming bath, but at the same time seem to have no particular objection to the scum which is necessary on a Perliton pot. Insofar as their own operations are concerned manipulation with a scum surface is not difficult.
5. They are not considering substitution of deep-hardening salt baths for pack hardening, and consequently have no data on this comparative basis.
6. They claim to have no interest in the Ajax-Hultgren type of furnace.

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DETROIT (cont'd)

Chrysler Corporation

At the Jefferson Avenue plant a little heat treatment is done and this with "Cyapegg". No changes in this operation are contemplated here. No heat treating is done at the DeSoto plant and very little at the Plymouth and Chrysler Highland Park plants. Practically all

heat treatment for this organization is done by the Dodge Division.

Concerning the Dodge Division practically no information has been developed beyond what Mr. Scott Taylor, metallurgist, has given to Mr. Gager at various times. We know that they operate a small amount of Aerocase and their Holcroft furnaces are used for certain purposes. Meanwhile they have continued to purchase large amounts of cyanide for hardening purposes, and to the best of our knowledge, they are not immediately planning to replace any cyanide with gas carburizing, although accelerated salt baths may be under consideration.

Commercial Steel Treating Corp.

This is the largest production job shop in Detroit, and probably in the middle west, so that it is imperative that they not only be prepared to heat treat by any method specified, but also have complete knowledge of the various processes offered for every purpose. Consequently, should a customer specify any one of the various types of accelerated salt baths, this concern would be in a position to perform the operation satisfactorily.

However, where no specification has been made, they always operate with straight cyanide, inasmuch as they claim to have performed thorough tests on the comparative operation of these various accelerated salt baths against Sodium Cyanide and found that in every case where the Sodium Cyanide content of the bath was maintained above 30% that there were no advantages whatsoever in the accelerated salt baths. This information is not at all in agreement with other data

given us by industrial concerns in Detroit, but at least is governing present salt bath operations at this plant. Please refer to K'Burg's Trade Report #536 of 8/25/37.

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DETROIT (cont'd)

Commonwealth Industries, Inc.

This is a small job shop doing both production hardening and production plating. Their chief interest is in plain heat treatment and carburizing, and very little is done in cyanide or salt baths. They have no data on the operation of various types of accelerated salt baths nor are they particularly interested. No information of value could be obtained here.

Detroit Bevel Gear Company

Their chief heat treating operation requires the use of heat treating salts purchased from us. We were informed that they have made no effort to study accelerated salt baths as compared to 75% Cyanide-Chloride Mixture purchased from us nor do they intend to do so. Consequently they had no information along this line and said that we need have no worry concerning their substitution of some other material for the use of our cyanide.

Detroit Gear & Machine Division—
Borg-Warner Corporation

1. Although they operate two fairly large pots with Holden's Light Case, cyanide appears to have no particular disadvantages or limitations here.
2. As best we can determine Holden's Light Case was installed here originally, only as an experiment, and they have continued to use it to substitute a portion of

the work formerly done in our cyanide. They attempt to obtain no greater case depth, but inasmuch as the difference in cost of operating these two baths is so slight (probably in favor of Holden's Light Case) they have never cared to return to cyanide for the same operation.

3. All heavy production work, that is, Ford truck gears, is cyanide in the Warner Gear type continuous furnace and basket work is done in Holden's Light Case in average size pot furnaces. In both processes they obtain about 0.003" to 0.005" of case in 20 to 40 minutes time at 1550° F.

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DETROIT (cont'd)

Detroit Gear & Machine Division—(cont'd) Borg-Warner Corporation

4. They have always objected to a scumming bath. A certain amount of scum is always present on their cyanide bath, but they no longer consider it a matter of major concern.
5. They make no effort to use the accelerated salt baths in competition with pack hardening so have no information.
6. They claim to have no particular interest in a furnace of the Ajax-Hultgren type, and for the time being, at least, they are not considering the installation of one.

Ex-Cell-O Corp.

1. At this particular plant the limitation of cyanide is failure to produce sufficient case depth in a reasonable time. For cases of 0.003" depth, they continue to use cyanide, but have changed over all of their other work to Holden Hard Case.

2. (See #1)
3. They had no data available.
4. No information was obtained.
5. They are not concerned with the substitution of accelerated salt baths for pack hardening, and consequently had no information.
6. No information.

Ford Motor Company

In the Ford Motor Company where the variety of the salt bath hardening operations is probably greater than in any other single plant in the country, it is almost impossible to give specific answers to the six questions proposed by Dr. Holt.

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DETROIT (cont'd).

Ford Motor Company (cont'd)

As generally as possible these answers would be as follows:

1. The greatest single limitation to the cyanide bath is stated to be its slow rate of case hardening as compared to the newer type of case hardening baths. It is not their purpose to substitute deep hardening baths for cyanide in order to obtain a greater depth of case than they were in the practice of obtaining with straight cyanide.
2. Perliton is in wide use throughout the Ford plant, because it produces a deeper case than cyanide in about two thirds of the time. It also operates with a scummed surface, which they believe to be highly advantageous in view of the greater comfort of the operator, the added pot life, and the lower cost of heating a pot where radiation is minimized.

3. Operations are too varied to give this information in detail, but this is partially answered in Question #2.
4. The scumming bath is definitely preferred and they do not find that the manipulation of this type of bath is much more difficult than straight cyanide.
5. They are making no effort to introduce accelerated salt baths to compete with pack hardening, consequently we cannot answer this question.
6. They are favorably impressed with furnaces such as the Ajax-Hultgren type, but inasmuch as their present intention is to replace salt baths with gas carburizing furnaces there is no point in their investing in this type of equipment. It is possible that some of the salt baths which they must continue to operate will eventually be placed in this kind of furnace.

For details of the situation here please see K'Burg's Trade Report #525 of 8/30/37.

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DETROIT (cont'd)

Gemmer Manufacturing Co.

1. For many years this concern has operated a bath of the accelerated salt type, chiefly because they were unable to obtain with cyanide a sufficient case depth in a reasonable hardening time.
2. They operate both Aerocase and Perliton for the reasons mentioned in No. 1.
3. We are unable to provide this information.
4. No data on this.
5. No effort is made to compare the operation of deep-hardening baths with pack hardening, consequently we have no information on this subject.
6. They operate Ajax-Hultgren furnaces only and are considerably pleased with the results obtained thereby.

Hudson Motor Car Company

1. The chief limitation of the cyanide bath here is its inability to produce deep cases, and it is their intention to substitute accelerated salt baths for cyanide in an effort to compete with pack hardening and carburizing.
2. The Perliton bath is favored here now, inasmuch as they are able to obtain good cases up to 0.035" depth in a time which compares most favorably with the overall time required to do the same operation by pack hardening.
3. At the moment they are using Perliton chiefly to perform operations formerly done in cyanide and not to substitute for pack hardening as is their ultimate intention. They use Perliton for both decreasing the amount of time required to produce a shallow case in cyanide and also to produce a deeper case in the same amount of time. Cost data is not available, but they believe they show an operating saving through using Perliton, in that less fuel is required to fire a pot of it. They have noticed very little difference in pot life obtaining around 1600 hours with cast steel pots.

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DETROIT (cont'd)Hudson Motor Car Company (cont'd)

4. A scumming bath is definitely preferred not only for the reasons mentioned in No. 3, but because the workmen experience much less discomfort from heat radiation and fumes. So far they have not been troubled to any extent by the scum in manipulation of the bath.
5. This is about the only concern in this territory where any thought has been given to the use of accelerated salt baths in competition with pack hardening. Even

for this they do not intend to carburize to as great a depth as they do with pack hardening, but expect to use it up to depths of 0.035", which can be produced in about 2½ hours at 1550° to 1600° F. The cost for producing this, they expect will be slightly less than the same operation done by pack hardening.

6. They are interested in the Ajax-Hultgren type furnace as a means of obtaining continuous salt bath hardening operation, but are a little afraid of difficulties which may be encountered if a scumming bath is used. Because they like the latter type of bath, they will probably hesitate some time before investigating the Ajax furnace for this purpose. Please refer to K'Burg's Trade Report #528 of 8/24/37.

Kelsey-Hayes Wheel Co.

1. Although they are now using an accelerated salt bath for operations almost identical to those carried out by Budd Wheel Company with cyanide, it would seem that they have no particular objection to the use of cyanide nor did they find any limitations to it. This same operation was formerly carried out in a cyanide mixture manufactured for them by the Park Chemical Company.
2. They are operating Parkcase throughout and apparently the only reason for selection was that they were induced to do so by Park Chemical Company. They claim there is very little difference between the price of this particular grade of Parkcase and that of the mixture formerly supplied them by the same concern, which would indicate that they had used either a 60% or 70% Sodium Cyanide.

DETROIT (cont'd)Kelsey-Hayes Wheel Co. (cont'd)

3. They have no comparative data on the relative cost of the use of Parkease and cyanide, although it is their belief that they save a very little bit on operating time.
4. They prefer not to have a seumming bath although they never made any effort to control this factor when using straight cyanide.
5. No information on this subject inasmuch as they are not considering the use of this type of bath in competition with pack hardening.
6. In theory the Ajax-Hultgren furnace appeals to them, but they have no particular interest in the operation of such a furnace now. If they did it would be merely to replace their present gas equipment and not with the idea of installing a larger pot.

Lincoln Engineering Co.

This concern operates several small pots using 30% Case Hardener purchased from us, merely as a clean heat treating medium. They have no other hardening operations and consequently are uninterested in accelerated salt baths or gas furnaces.

Long Mfg. Division—Borg-Warner Corporation

1. So far they have found no limitation to the use of straight cyanide and are not at the moment using any accelerated salt baths and claim not to be contemplating their use.
2. See No. 1.
3. See No. 1.

4. They do not prefer a scum type bath.
5. No information.
6. They intend to install an Ajax-Hultgren type furnace for use with heat treating salts in connection with brazing operations. So far this concern has not experimented with accelerated salt baths, although I believe such could be used if properly sold to them. Evidently this has not been done yet and they state that they prefer to continue to use cyanide.

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DETROIT (cont'd)

Motor Products Corp.

Heat treating operations at this plant are extremely limited as they operate but three small pots, two with "Cyanegg" and one with Perliton. These pots are operated very intermittently and as a consequence their consumption of these materials is very small. No information of value was obtained.

National Machine Products Co.

This concern has one Ajax-Hultgren furnace in which they use 30% Sodium Cyanide purchased from American Cyanamid Company as a clean heat treating medium only. They are not interested in accelerated salt baths nor gas hardening furnaces.

Packard Motor Car Co.

We were given to understand by their metallurgist that they operate only two salt bath pots throughout the Packard plant, one of which is a cyanide mixture, which they make by dilution of "Cyanegg" with Sodium Chloride and the other pot in which they are experimenting with Perliton. They have drawn no

conclusions as to the value of the latter process, and consequently were not in a position to give us much information. We were previously advised by their Purchasing Department that they were experimenting with Holden's Hard Case and also Parkcase, so it is evident they are making a complete trial of the materials in this field, although in any event; their total consumption is not likely to be very large even after the final decision as to which bath will be used is made.

Service Heat Treating Co.

This is a job heat treating shop which uses our Sodium Cyanides, chiefly as a clean heat treating medium for nuts and bolts for one of their customers. Their salt bath facilities are very limited and they are not using nor contemplating using any accelerated salt bath.

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DETROIT (cont'd)

Timken-Detroit Axle Co.

Practically all heat treating operations here are of the pack hardening type, although they operate two cyanide pots intermittently with "Cyanegg". They are not interested in the use of accelerated salt baths nor do they have sufficient shallow case operations to warrant the installation of expensive gas furnace equipment. At their Wisconsin Axle plant, Oshkosh, Wisconsin, they are experimenting with Parkcase in competition with cyanide, but nothing definite has been started as yet we understand. Please refer to K'Burg's Trade Report #539 of 8/25/37.

Universal Products Co., Inc.

1. The only limitation which they found for cyanide which forced them to consider accelerated salt baths was on

a special part manufactured for Dodge where they ran into brittleness on a many-edged piece. They were able to overcome at the suggestion of Dodge by installation of a bath which produces a predominately carbon case.

2. For this operation Aerocase was selected because of the nature of the case produced and because Dodge was using the same bath successfully for a similar operation.
3. They make no particular effort to obtain a deeper case with Aerocase than they did with cyanide and their time of treatment is extremely short anyhow. They have no definite data comparing costs between the two processes.
4. No information.
5. No information.
6. No information.

Vincent Steel Process Co.

This is a fairly large job shop doing practically every type of heat treatment with the exception of some of the special processes such as nitriding or Chapmanizing. Up until recently they operated with our cyanide only, but because the son of the owner, is the local representative for Holden, they have replaced much of their cyaniding operations with both Holden's Hard Case and Light Case. As the result our cyanide sales here have decreased, but not because of any particular limitation.

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DETROIT (cont'd)

Vincent Steel Process Co. (cont'd)

of the cyanide bath. They believe that it costs them

about the same to operate either Holden baths as compared to Sodium Cyanide.

Whitman & Barnes Co.

They are a very small user of cyanide for heat treating purposes, consequently no call was made here recently. They consume approximately 500# of cyanide yearly.

Job Heat Treating Plants

The following concerns are all job heat treating plants located in Detroit and which consume cyanide or cyanide mixtures in varying small amounts from local suppliers. No contracts were made at any of these plants because of the limited amount of information we could obtain from such a user, but they are listed here in order to complete the picture in the Detroit area:—

Acme Steel Process Co.

Anderson Steel Treating Co.

Auto City Treating Co.

Detroit Steel Treating Co.

General Steel Treating Co.

Standard Heat Treating Co.

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MICHIGAN (EXCLUSIVE OF DETROIT)

ADRIAN

Schwarze Electric Co.

This concern is a relatively small user of Sodium Cyanide for heat treating purposes, but what they use they purchase from us. No recent call has been made here although we understand that in view of the limited extent of their hardening operations they will continue to use Sodium Cyanide.

ALLEGAN**Blood-Brothers Machine Co.**

Although they have experimented with Perliton, they were unable to note sufficient advantages to warrant replacing straight cyanide heat treating with this bath and consequently the use of accelerated salt baths in general are not under consideration. For their present purposes Sodium Cyanide does adequately, and they expect to continue its use.

BAY CITY**Chevrolet-Bay City Division****General Motors Corporation**

- 1 DuPont 75% Cyanide Chloride Mixture continues to be used here for practically all operations except the hardening of the Chevrolet speedometer gear on which they find they require a deeper case than can be produced with cyanide.
- 2 For the speedometer gear operation they use Holden's Light (?) Case for the reason mentioned above.
- 3 No information was obtained.
- 4 They prefer not to have a scumming bath, which is one of the reasons why they installed Holden's Light Case instead of Perliton. It will be recalled that they complained some years ago about scum on straight cyanide baths, and although this was never completely eliminated they were convinced that there was some merit in a certain amount of scum on the surface of most any molten bath.
- 5 No information
- 6 No information

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BENTON HARBOR, MICHIGAN

New Products Corp.

No calls have been made here recently, but this is a very small concern, which formerly operated a single pot using straight Sodium Cyanide. Heat treating requirements at that time were extremely limited, and judging from the appearance of the plant, we are doubtful if any increases in this operation have occurred.

BIG RAPIDS

Hanchett Mfg. Co.

This concern operates one salt bath using Perliton which they find very satisfactory for their purposes. They require a slightly deeper case than they formerly obtained with straight Sodium Cyanide and expect to continue its operation. Salt bath operations are very limited, consequently we have no information of value on this concern's activities.

BUCHANAN

Clark Equipment Co.

- 1 They are using "Cyanegg" for all salt bath hardening operations; the remainder of the heat treatment in this plant being pack hardening. Cyanide is used largely as a reheat after pack hardening or as a clean heat treating medium. Where salt baths ~~are~~ required they have not found cyanide to offer any limitations.
- 2 They are operating Holden's Light Case in one small pot, but this appears to be an error as they really require Holden's High Speed Case for the purpose intended. The use of this bath as a substitute for cyanide was not contemplated when the material was purchased. This, of course, does not preclude the possi-

bility of an attempt on their part to use it for this purpose.

- 3 No information available.
- 4 They prefer not to have a scumming bath, but make no effort to control this factor on the cyanide bath they operate at present.

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BUCHANAN, MICHIGAN (cont'd)

Clark Equipment Co. (cont'd)

- 5 Some years ago they attempted to substitute Aerocase for some pack hardening operation and found that this was entirely too costly; although they were able to obtain fairly satisfactory results on the particular operation in question.
- 6 They have no information on this type of furnace and do not appear to be interested.

FLINT

AC Spark Plug Division-

General Motors Corp.

No deep hardening baths are in operation here and it is very unlikely that any will be installed because of the nature of the small parts which they must harden in salt baths. Many years ago they found that for a certain group of very small parts, the use of a salt bath was too expensive because of the excessive drag-out and for this purpose a gas carburizing furnace was installed. This was always used with complete satisfaction.

Buick Motor Division-

General Motors Corp.

- 1 We have been given to understand that for most of the

operations Buick has conducted in salt baths during the past few years Sodium Cyanide had no particular limitation. For speedometer gears, however, they found that better results could be obtained with a deeper case produced thru the use of deep hardening salt baths.

- 2 Holden's Light Case has been used here in very large quantities through 1936 and 1937 as a heating medium for the reheat of gears manufactured from oil hardening steel. Formerly this operation was carried out in a bath made up from 40% Sodium Cyanide mixed by themselves. The real reason for this change was not disclosed inasmuch as it did not seem to be one of improvement in treatment, and it definitely increased their cost. The Metallurgical Department of Buick recommended against it. Probably the only reason why Holden's material was used here was

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FLINT, MICHIGAN (cont'd)

Buick Motor Division - (cont'd)

General Motors Corp.

because this was the first of the accelerated salt baths of this type to be installed in the Buick plant, and this was done only experimentally on a small job prior to its general use on gears.

On speedometer gears Parkcase is being used and is producing very satisfactory results. In this instance they wished a deeper case than could be obtained thru use of cyanide.

- 3 No data could be secured except that the Metallurgical Department of Buick feels that the use of Holden Light Case instead of 40% Cyanide has cost the company

just about the difference between the material costs of the two products. This is in the neighborhood of 4c to 5c per pound in favor of the 40% cyanide.

- 4 Scumming baths are not preferred.
- 5 None of their experimenting with accelerated salt baths has been done with the object of replacing pack hardening operations.
- 6 Because they are now installing Holcroft furnaces for shallow case gas carburizing, they have no interest in the Ajax-Hultgren furnace.

GRAND HAVEN

Ottawa Steel Products Co.

This company is a very small user of Sodium Cyanide for heat treating purposes, consequently no call has been made here recently.

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GRAND RAPIDS, MICHIGAN

Keeler Brass Co.

- 1 For their purposes they have discovered no limitation of the cyanide bath.
- 2 Trials have been made of Perliton, Holdén Light Case and Hard Case, and also Parkcase, all of which possessed disadvantages as compared to cyanide, and insofar as they were able to determine, no advantages.
- 3 They attempt to obtain about 0.004" to 0.005" case in 30 minutes, and feel that they come quite close to this with "Cyanegg." During their trials with deep-hardening salt baths no attempt was made to secure comparative data on cost, drag-out, etc.
- 4 A scumming bath is particularly objectionable to them.
- 5 No information.

6 They are not interested in the Ajax-Hultgren furnace and plan to install several new gas fired furnaces soon. Gas costs are very low in Grand Rapids since natural gas has been piped into the city recently.

Knape & Vogt Mfg. Co.

Salt bath hardening operations here are very limited, although they purchase "Cyanegg" for this purpose thru J. C. Miller Co. No call was considered necessary during this survey.

National Brass Co.

They operate one small pot using our 45% Cyanide-Chloride Mixture for Tool Room work. Consequently they have no interest in deep-hardening salt baths.

JACKSON

Frost Gear & Forge Co.

Because the plant was closed and personnel absent on vacation no up-to-date information was obtained. In the past they have been using French 96-98% Sodium Cyanide purchased thru Park Chemical Company, but to the best of my knowledge were not using any accelerated salt baths. Due to the nature of their work it is quite likely that an accelerated salt bath would produce even better results than are obtained from Sodium Cyanide so it would not be surprising to find that they are experimenting with such processes.

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JACKSON, MICHIGAN (cont'd)

Ryerson & Haynes, Inc.

One large pot is in operation using Holden Light Case on a part which might better be heat treated in cya-

nide. They know very little of heat treating operation so merely have continued with the first material brought to their attention at the time their salt bath furnace was installed. Use of low test cyanide has been suggested for their purpose and it is possible that the change will be made later at some saving to themselves.

Teer-Wickwire & Co., Inc.

Salt bath operations here are very limited and becoming less year by year. They harden a Ford replacement part and use "Cyanegg" for this purpose. Due to their lessening interest in cyanide or any salt bath, they see no point in investigating accelerated salts.

KALAMAZOO

Fuller Mfg. Co.

One small gear which they produce is hardened in 45% Sodium Cyanide purchased from American Cyanamid Co. They have tried Holden Light Case, which produces about the same type of case they now obtain with cyanide, but which offered some operating difficulties, making its use objectionable. Consequently they are not looking into accelerated salt baths of any form and expect to continue to use Sodium Cyanide.

LANSING

Motor Wheel Corp.

Salt bath operations are very small and they use cyanide purchased from Carrier-Stephens Company for this purpose. They claim to have no interest in accelerated salt baths and the amount of heat treating they do would not warrant the installation of gas hardening furnaces for this purpose.

LANSING, MICHIGAN (cont')

Olds Motor Works Division—

General Motors Corporation

- 1 Although they intend to experiment with a deep-hardening salt bath this is not because they feel they are unable to obtain the same results with Sodium Cyanide.
- 2 At the present no deep hardening bath is in operation here, although they have made trials with Perliton, but discarded it because they found it produced non-uniform cases. They expect to make a trial with Parkcase soon, because Park Chemical Company have claimed that this bath will eliminate fuming, which is their one single objection to the operation of straight cyanide.
- 3 Their work is strictly production of shallow cases in cyanide or the use of the latter as a clean heat treating medium. They emphasize that they are not looking for a bath which will produce a deeper case than they are now obtaining. Whether they will continue with Parkcase after the trial is entirely dependent upon the type of results produced.
- 4 If a scumming bath is the only answer to their objection to fuming, it is likely that they will be in favor of it.
- 5 No information.
- 6 They are not concerned with the Ajax-Hultgren furnace nor at the moment substitution of gas hardening equipment for this shallow case work. They believe that the latter operation is quite feasible and with further refinements in this type of furnace they may be interested.

Reo Motor Car Co.

Very little of the Sodium Cyanide which they purchase

here is used for case hardening as heat treating operations here are very limited.

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LAWTON, MICHIGAN

Stearns-Stafford, Inc.

No calls have been made here for quite some time, but this is a very small concern manufacturing roller bearings, the races of which are hardened in one pot using 96-98% Sodium Cyanide purchased from the American Cyanamid Co.

MT. CLEMENS

Mt. Clemens Tool & Gear Works

This is another small concern operating one small pot with our 45% and 75% Cyanide-Chloride Mixture. They harden Ford water pump gears to a depth of about 0.002" and do this in a very short time. As the result they have no particular interest in deep-hardening baths nor gas furnaces.

MUSKEGON

American Coil Spring Co.

Heat treating operations here are confined mostly to wire annealing or to heat treatment in controlled gas atmospheres. They do a small amount of cyaniding for which they use French cyanide. No call was made here because of the limited amount of work of this type being done.

Brickner-Kropf Machine Co.

They operate "Ducase" in exactly the same manner as Burroughs Adding Machine Company and obtain good results. This is the only pot they have so it is

evident their heat treating operations are very small. They treat at a temperature of about 1500° F for three hours and obtain a case of about 0.025".

Continental Motors Corporation

- 1 As compared to accelerated salt baths, they so far have found no advantages of these over a straight Sodium Cyanide bath.

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MUSKEGON, MICHIGAN (cont'd)

Continental Motors Corporation (cont'd)

- 2 Trials have been made of Perliton, Holden Hard Case and Holden Light Case, and also Parkcase, but none of these are in operation here now. So far as this plant is concerned all of these baths have the same disadvantage, that is, failure to produce as clean a job as can be done in cyanide.
- 3 No information.
- 4 They definitely prefer a bath operated without scum.
- 5 No attempt is made to operate any salt bath in competition with pack hardening.
- 6 They are not familiar with the Ajax-Hultgren furnace and do not appear to be interested. They are, however, very impressed with the possibilities of small rotary gas furnaces for shallow case work on small parts. Should they ever enlarge the heat treating department it is quite likely that several of this type of furnace would be installed, which, of course, would be competitive to cyanide.

Muskegon Motors Specialties Company

Inasmuch as no changes are planned which would install a process or processes competitive to cyanide there was little information to be obtained here. They

use "Cyanegg" as a reheat after carburizing and do not believe that accelerated salt baths could improve upon the results they now obtain. For Cam Shafts, which is the chief item of their manufacture at this plant, they are not planning to change the type of steel to one which can be quenched directly from the carburizing operation.

OXFORD

Master Machine & Gear Co.

This concern, like Mt. Clemens Tool & Gear Works, produces water pump gears for Ford and cyanide them in accordance with Ford's directions. They are not interested in accelerated salt baths, and gas hardening is practically out of the question.

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PONTIAC, MICHIGAN

General Motors Truck & Coach Division

Yellow Truck and Coach Mfg. Co.

1. For many years they have operated accelerated salt baths to produce a case of greater depth than can be obtained with straight cyanide.
2. This bath is Aerocase and it was selected because at the time it was the only one of the accelerated salt baths on the market.
3. They require case depth of about 0.018", which they produce in Aerocase in about one hour. They have in the past operated pots with "Ducase" and with Perliton, but decided not to use the former because it proved to be more costly in operation than Aerocase and the latter had no advantages over Aerocase in any respect. They state that they were well pleased with the operation of "Ducase" and might have continued with it except for the expense involved.

4. They would rather not have a scumming bath, which is one of the reasons they decided not to continue with Perliton.
5. No information.
6. No information.

Pontiac Motor Division-
General Motors Corporation

No accelerated salt baths are in operation here although they have tried out practically all of them. The Metallurgical Department was unable to note any advantages whatsoever over straight Sodium Cyanide so use of the latter will be continued. Concerning possible use of gas furnaces for shallow cases, they feel that the quality of case produced by this type of treatment is not as high as they are able to obtain thru the use of cyanide so no changes will be made. In support of this contention they are now enlarging their heat treating plant and installing additional cyanide pots. These are not of the Ajax-Hultgren type for the reason that they feel that gas firing is more reasonable in the long run in Pontiac.

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PONT HURON, MICHIGAN

Pressed Metals Of America, Inc.

This large user of our 45% Cyanide-Chloride Mixture is making changes which tend to the elimination of Sodium Cyanide, but not thru the use of accelerated salt baths. Gas furnaces for shallow case work are being installed only as a matter of economy and very little else can be said about it. Please see K'Burg's Trade Report #542 of 8/26/37.

SAGINAW**Chevrolet Parts Mfg. Division—****General Motors Corporation**

- 1 Sodium Cyanide is used throughout this plant except for a special clutch part, which they found they could not harden in cyanide without holding the cyanide concentration at a point considerably above that at which it would be normally maintained thru the use of 96-98% material with normal drag-out. The use of an accelerated salt bath maintained at a fairly high Sodium Cyanide concentration thru the addition of 96-98% material has proven quite satisfactory.
- 2 For this work Holden Light Case was selected due chiefly to the fact that this was the material Buick happened to be using.
- 3 In cyanide they treat Chevrolet transmissions of SAE 5145 steel for 15 minutes at 1490° F. and then at 10 minutes at 1400° F. for quenching. This treatment has proven to produce excellent transmissions. Altho they could use Holden Light Case for the same operation it would be too expensive and no effort has been made to treat gears in this manner. The comparative cost figures for the operation now being done in Holden Light Case, both before and after, are of little value because of the acknowledged high cost of the process as previously done in straight cyanide.

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SAGINAW, MICHIGAN (cont'd)**Chevrolet Parts Mfg. Division—(cont'd)****General Motors Corporation**

- 4 They prefer to operate a bath with a scum and add

- graphite to the surface of the Holden bath in order to accomplish this. At present they are not doing this on the cyanide bath, but may do so in the near future.
- So far the manipulation of the scum type bath has not been any more difficult than of one without seum.
- 5 No attempt is made to use accelerator salt baths to produce a case otherwise done by pack hardening so no information is available.
- 6 Ajax-Hultgren furnaces are not being considered because of the extremely low gas rate in the Saginaw area.

Columbia Mills, Inc.

They do a small amount of heat treatment using 30% Case Hardener, but these operations are very limited. Consequently no call was made here.

Lufkin Rule Company

They also have very limited cyaniding operations and advise that they are not considering the use of accelerated salt baths for this work.

Nelson Bros. Company

They use our 75% Cyanide-Chloride Mixture for one operation which is carried out at very infrequent intervals. Consequently salt bath operations are not of importance here.

Saginaw Steering Gear Division

General Motors Corporation

- 1 The use of salt baths was a matter of small moment up until very recently when they installed a large furnace, using an accelerated salt bath. Straight Sodium Cyanide was never tried for this operation as it was formerly done by a concern in Detroit using deep-hardening salt baths.

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SAGINAW, MICHIGAN (cont'd)

Saginaw Steering Gear Division—(cont'd)

General Motors Corporation

- 2 Parkcase is being used here now; although it is still indefinite as to whether its use will be continued, inasmuch as it has not been operated long enough for complete evaluation. They did try Aerocase; but discarded it because of the cleaning problem involved. Parkcase was then tried because of the success of this bath at Kelsey-Hayes Wheel Company.
- 3 They have no data on cost of operation of these baths. An attempt is made to obtain about 0.010" to 0.012" case in thirty minutes.
- 4 This bath is operated with a scum, and so far they have not found it difficult to use this scum and still obtain clean work.
- 5 This operation is not competitive to pack hardening.
- 6 Their only furnace is an Ajax-Hultgren with which they seem to be very pleased.

ST. JOSEPH

St. Joe Machines, Inc.

Heat treating operations here are extremely limited and they purchase 45% Cyanide-Chloride Mixture from us for this purpose. No information was sought here.

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WISCONSIN

MILWAUKEE

Allis Chalmers Mfg. Co.

- 1 They have found cyanide to be ineffective for a depth

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of case of 0.008" to 0.010" and consequently they are installing an electric heat treating furnace. (See Papp's Trade Report #552 of 9/2/37). No detail was given on this type of furnace but we assume it to be one in which they use a controlled gas atmosphere. Accelerated salt baths are not under consideration.

- 2 See No. 1.
- 3 At 1650° to 1700° F. they are able to produce their required depth of case in the electric furnace in about 20 to 30 minutes.
- 4 On the cyanide baths which they are still operating, but which it is their intention to replace, they prefer to have no scum.
- 5 No information.
- 6 No information.

Briggs & Stratton Corp.

- 1 The cyanide bath for their particular purposes appears to have no limitations.
- 2 Experimental work has been conducted with Perliton and Holden materials, but the use of both or either was decided against when no advantages could be found over their present operations with straight Sodium Cyanide.
- 3 No information.
- 4 They prefer not to have a scum on their baths.
- 5 These operations are not competitive to pack hardening, consequently, we have no information.
- 6 They are not familiar with the Ajax-Hultgren furnace.

Cutler-Hammer Mfg. Co.

There is no indication that this company is concerned with accelerated salt baths or with gas-hardening equipment, so we have very little information along

this line. They continue to use our 75% Cyanide-Chloride Mixture exclusively for their salt bath operation.

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MILWAUKEE, WISCONSIN (cont'd)

Harley-Davidson Motor Co.

- 1 They require a deeper case than can be economically obtained in cyanide, and consequently have operated one of the accelerated salt baths for a number of years.
- 2 Aerocase has been used here successfully and was probably chosen originally because it was the only bath of this type on the market at the time.
- 3 They have no information as to comparative costs, but endeavor to produce 0.005" case in 15 minutes and 0.015" case in 1½ hours with Aerocase.
- 4 They prefer to have no scum.
- 5 There is no information.
- 6 Their metallurgist has given some thought to a furnace of the Ajax-Hultgren type and feels that certain economies could be obtained thru its use. However, what is true for cyanide in this type of furnace would also be true for Aerocase.

International Harvester Co.

- 1 Mr. Papp's Trade Report #374 of 5/27/37 indicates that they have recently begun heat treating operations, using Parkcase, and apparently have no data to offer as to its merits compared to cyanide.
- 2 See No. 1.
- 3 No information.
- 4 Material is supposed to be equivalent to Perliton, which, of course, operates with a scum, so it is evident that they prefer this type of bath.
- 5 No information.

- 6 We understand that they intend to install an Ajax-Hultgren furnace in which other types of cyanide compounds in addition to Parkcase will be tried.

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MILWAUKEE, WISCONSIN (cont'd)

Jambor Tool & Stamping Co.

- 1 With their present method of operation a straight cyanide bath appears to be quite satisfactory.
- 2 No accelerated salt baths are being used here now, although Perliton was once tried and no advantage was noticed.
- 3 All of their cyaniding operations are for reheating, wherein they remove the carburized work and without cooling immerse it in cyanide for 15 minutes at 1600° F. They claim that this produces a case of 0.012" thickness. Their cost for this operation is about 1½¢ per pound.
- 4 They prefer to operate a non-scumming bath.
- 5 This operation is not intended to be competitive to pack hardening.
- 6 They are not familiar with the Ajax-Hultgren furnace.

Thurner Heat Treating Co.

This is a job shop in which, of course, they are expected to be able to do any type of heat treating. The use of accelerated salt baths here is only on specification, and as a consequence, is extremely limited. No information of particular value was obtained.

Wesley Steel Treating Co.

This is one of the higher type job heat treating shops in the middle west, and must always be in a position to do most any type of work. Mr. Papp in his Trade

Report #553 advised us that they are, however, operating but little accelerated salt baths as straight Sodium Cyanide is preferred.

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WISCONSIN (EXCLUSIVE OF MILWAUKEE)

CLINTONVILLE

Four Wheel Drive Auto Co.

Although they use a fair amount of 45% Cyanide-Chloride Mixture for reheating, they appear to have no interest in accelerated salt baths, and consequently we have no information of value along this line.

GREEN BAY

Northwest Engineering Co.

Cyaniding requirements are very limited and they appear to have no interest in accelerated salt baths.

KENOSHA

MacWhyte Co.

This concern uses heat treating salt only.

Nash Division-

Nash-Kelvinator Corp.

- 1 The cyanide bath here is operated only as a very short reheat or wash prior to quenching their transmission gears from atmospheric control furnaces. For deeper cases, that is, 0.010" and 0.015", they are now experimenting with Perliton.
- 2 The reason for the selection of Perliton instead of any of the other accelerated case hardening baths, it is not evident, although it is known that Nash are in close touch with Houghton.

- 3 Their uses of Perliton and of cyanide are not particularly competitive, so comparative cost data would mean little. With Perliton they are able to obtain 0.010" to 0.015" case in about 30 minutes at 1550° F. No cost data is available.
- 4 They prefer to have no scum on their cyanide baths, although it is evident that with the use of Perliton, they must take this factor into consideration.
- 5 It appears that their use of Perliton is in part connected with a desire to eliminate some carburizing work where the usual deep case of pack hardening is unnecessary. However, no cost data on this operation was secured.

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KENOSHA, WISCONSIN (cont'd)

Nash Division - (cont'd)

Nash-Kelvinator Corp.

- 6 They are not using the Ajax-Hultgren furnace nor does it appear that they are interested in it. Their Metallurgical Department believes that for certain types of work the operation of such a furnace should be quite economical.

MADISON

Madison Kipp Corp.

Heat treating operations here are very limited and are confined to the use of a small amount of 75% Cyanide-Chloride Mixture purchased from us. There is no indication that they are interested in an accelerated salt bath in substitution.

NEENAHKimberly-Clark Corp.

A very small amount of 45% Cyanide-Chloride Mixture is used here for hardening purposes, and it would appear that this is largely tool room work. It is unlikely that accelerated salt baths are of interest to them.

OSHKOSHWisconsin Axle Co.

In Papp's Trade Report #571 of 9/10/37 he points out that the use of Holden's Hard Case and Park Chemical Company's Quick Case is new here, and consequently he was unable to obtain much data. The quantities reported are relatively small, however.

RACINEAndis Clipper Co.

In Papp's Trade Report #720 of 8/26/36, he shows an annual consumption of Perliton of 400 lbs. This apparently is the limit of their heat treating operation, which of course, is too small to warrant any special calls for this survey.

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RACINE, WISCONSIN (cont'd)J. I. Case & Co.

This concern purchases a small amount of 45% Cyanide-Chloride Mixture from American Cyanamid Company and apparently has no interest in accelerated salt baths. Their salt bath operations throughout are very limited, and consequently no information was developed.

Twin Disc Clutch Co.

- 1 Their cyaniding operations were discontinued some time ago and replaced with accelerated salt baths because cyanide failed to produce sufficient depth of case in a reasonable length of time.
- 2 They have experimented both with Perliton and Holden's Hard Case and at the present seem to be using Perliton.
- 3 Perliton enables them to obtain 0.015" case at 1550° F in 1½ hours. This, of course, is too shallow a case to be done by pack hardening and too deep for straight cyanide. No data was available regarding costs, etc.
- 4 No information.
- 5 Their operation is not competitive to pack hardening.
- 6 No information.

RIPONBarlow & Seelig Mfg. Co.

In Papp's Trade Report #132 of 2/17/37, he indicates a very small amount of 45% Cyanide-Chloride Mixture consumed for heat treating. In view of this no information of value in this survey could be obtained.

WEST BENDPick Mfg. Co.

Last report of call here was by Papp on 2/27/36 in which he lists a small amount of 45% cyanide (Houghton) in use for heat treatment. It is evident that their consumption is quite small and their case hardening operations would be likewise.

MINNESOTA
MINNEAPOLIS

Getchell Steel Treating Co.

Information from this job heat treating shop is limited and unimportant, because their consumption of salt bath materials is quite small.

Hart-Carter Co.

Papp reports in his #494 of 7/22/37 that cyanide and carburizing compounds are the only materials used here.

Twin City Steel Treating Co.

- 1 They expect to install several pots of Perliton soon to harden work which requires a deeper case than can be produced thru the use of straight cyanide.
- 2 (See No. 1)
- 3 No information.
- 4 No information.
- 5 No information.
- 6 No information.

FAIRBAULT

Nutting Truck Co.

This concern is a very small user of cyanide for heat treating purposes, and consequently was not called upon during this survey.

HOPKINS

Minneapolis, Moline Power Co.

This company has very limited cyaniding requirements and consequently little information of value could be obtained here.

MANKATOTruth Tool Co.

Heat treating operations are very limited and are confined to the use of a little 45% Cyanide Chloride Mixture and some Perliton. Papp's last Report #255 of 4/6/37 indicates extremely limited consumption of these materials.

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That portion of the 1917 Report of the du Pont Company to its stockholders which was read into the record, as it appears on printed page 2245 of the Transcript (February 27, 1953) is Government Trial Exhibit No. 1409.

NOTE:-The portion that was read into the record is as follows:

"Announcement was recently made of the acquisition of a large interest in the General Motors Corporation and Chevrolet Motor Company. Though this is a new line of activity, it is one of great promise and one that seems to be well suited to the character of our organization. The motor companies are very large consumers of our Fabrikoid and Pyralin as well as paints and varnishes."

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